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GEOGRAPHY IN WAR AND PEACE

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"AND what have they done? What have they done?" This was the question derisively asked by the educated public about the Fellows of the Royal Society in the early years of their incorporation. It is asked to-day, and in the same mocking spirit, about geographers. But before I answer it by sketching in outline some of the geographical work done in war time, and other such work in progress now that we have peace, I think it is worth while to quote from the reply which was made by the Rev. Joseph Glanvill, Rector of Bath, to those Aristotelian scoffers at the New Science in the seventeenth century: "What one Age can do (he wrote) in so immense an undertaking [for to arrive at a 'true knowledge of General Nature' was the original objective of the Royal Society], what one Age can do can be little more than to remove the Rubbish, lay in the Materials, and put things in order for the Building. . . . We must seek and gather, observe and examine, and lay up in Bank for the Ages that come after. . : . True knowledge (he added) must proceed slowly, by degrees almost insensible." The same answer serves for the defence of any young science, and particularly for the young science of geography which seeks to collect, record and interrelate the myriad phenomena which produce the regional differentiation of the Earth's surface: with the ultimate purpose of evaluating such "circumstances of place" in relation to human history and human affairs. That "Geography and Chronology are the Sun and the Moon, the Right Eye and the Left of all History," was the bold yet familar saying of the Elizabethan Age; and it remains true to-day that every historian, politician or philosopher will admit that circumstances of time and place are rarely irrelevant to the events or policies he is discussing. Yet each normally regards geographical circumstances as mere "accidents," and as being of so obvious a character that it needs no trained geographer to point them out: much less are they thought to deserve analysis in detail. The economic historian Professor Nef, for example, referring to the freedom of England from major wars during the troubled continental period of 1540-1640, expressed the opinion that geography was the principal reason for our century of peace. Yet by "geography" he meant no more than that Britain was an island, and it is not necessary to look far to learn that mere insularity

conveys no immunity, but rather that an island may become repeatedly a theatre of war. A military expert again, writing on the Balkan campaign, declared that its strategy was "entirely a matter of geography." True! but he understood by this no more than that owing to the very restricted corridors of movement there are certain key sites of vital importance—an analysis correct enough so far as it goes.

This over-simplified view of geography, which considers its content as obvious to any intelligent person, is that generally adopted by humanists to-day, and as a consequence not one of the new schemes put forward for the advancement of general education and culture, whether by means of university degrees designed to achieve a balance between science and the humanities (as in the plan put forward by the British Association), by the devotion of more money to research, or specifically by fostering the social sciences (as recently urged in the House of Lords)—not one of these contains any reference to geography. The pure scientist (although he plays a much smaller part than the humanist in educational policy and administration) also sees no reason to include geography in the curriculum since (except in certain limited aspects) it is not susceptible of study by the method of controlled experiment in the laboratory, and consequently (as he sees it) is neither a science nor a useful discipline. Nevertheless, wherever there are Geography Departments in the Universities these are full and overfull, while owing to this demand on the part of students, the number of Chairs in Geography has been rapidly raised in the last few years. This has coincidentally created a real problem as regards competent teaching personnel, the more so as several of our most promising younger geographers have accepted invitations to take up posts in new Departments overseas.

The fact is that the consequences of the regional differentiation of the world's surface, or in simpler terms the circumstances of place, are beginning to be recognised by ordinary people as crucial factors in world affairs to-day, and it is imperative that geography in its widest modern sense should be accepted, not merely as an academic specialism, but as a necessary part of the habitual background of intelligent thinking. What are the primary facts behind the expression "Great Powers"? They are geographical. Power depends first and foremost on the command of developed food-bases: that is to say, of agricultural lowlands where the climate is an optimum for two or three of the more nourishing food-grains. Secondly, it resides in what I may term mobility and accessibility—a situation athwart those natural lines of movement by land and water which link current growing-points of world development. Thirdly, power implies the command of very large-scale mineral resources and, in particular (indeed of supreme importance to-day), command of major sources of mechanical power, coal and oil, supplemented by accessible large-scale concentrations of falling water. Now the patterns of world distribution of lowlands, of optimum climates, of natural accessibility, of particular minerals and power resources are all quite different and distinct. Hence the chances of a coincidence of the complete combination of advantageous conditions within the boundary of a Nation State are remote. Naturally the chances increase with size: but size alone, even of the order of millions of square miles, is not enough, although it allows the combination of the two opposities, accessibility and inaccessibility, the latter having its function in modern warfare.

Since the days have passed in which these prerequisites of power could be assembled under one flag by overseas Empire-building, two countries only, by no intrinsic merits of their own, qualify as First Class Powers. The precise assessment of the geographies of the United States and the Union of Soviet Socialist Republics becomes, I submit, as important as the precise understanding of their ideologies. Are they closely matched? Or (from the theoretical standpoint) could a better balance be obtained if by means of some alliance Canada were thrown into the scales on the one hand and contiguous parts of the Middle East on the other? This would level up mineral oil, timber and gold, but would create new disparities in certain very desirable strategic metals and ores, and possibly in fertilisers, which lie behind food, which lies behind manpower. But if we lined the whole world up behind them in two chains, like children playing oranges and lemons, we could not achieve a perfect geographical balance. World unity is the only solution.

These inharmonious patterns of men and things which "expansion" seeks to correct are not mere accidents, mere isolated facts or "things in themselves." The Earth, its resources and its living inhabitants form a related organic whole, not to be understood if merely regarded piecemeal. This concept of Geography, that it is the global way of examining and interpreting phenomena, was first sketched out by Alexander von Humboldt at the opening of the nineteenth century. And global thinking was never more needed than to-day. As Sir Halford Mackinder said in one of his last public pronouncements (and I quote him as a tribute also to his memory): "Henceforward nothing significant can happen in human affairs at any spot on the earth but what its effects will spread, like the Krakatoan dust, over the whole global surface. We have now to adapt our minds to living in a closed environment."

General Smuts has recently pursued the same idea in his Introduction to the late Professor Bews' *Human Ecology*: "The world is not a chaos, [not] a chance selection of items and fragments. It is a closely interwoven system of patterns. . . . Our most painstaking effort at understanding the world discloses certain dominant features in it—rhythm, regularity, interconnexion and linkings up, an interplay of active relationships which is creative of structures, forms, patterns. . . . This is the holistic doctrine which underlies ecology. The organism is not itself alone and in isolation. As a unit it is a mere static abstraction. The real dynamic unit is the organism functioning in its environment." Smuts was here ranging rather beyond the limits of geography, for human ecology extends further than the visible patterns of men and things upon the earth's surface, the cultural landscape as it is called. But the "holistic" view-point is what we, too, seek to establish.

It is one of the unfortunate maladjustments of our time that the solution of problems by fragmentation, abstraction and isolation, absolutely essential as it is to the methodology of pure science, but involving a minute specialisation of knowledge and interest, has come to be thought of as desirable for its own sake, and indeed as providing a pattern for all organisations and systems necessary to the conduct of affairs. We see the results in the rigid departmentalism at all levels of Government, of the Services, of the Schools and Universities, with the result of almost insuperable difficulties in securing co-ordinated action or of effecting "combined operations." While this

way of thinking persists geography is naturally under suspicion, since to speak of a geography " specialist " appears to be a contradiction in terms. The early results obtained, moreover, by this young science have been necessarily crude, but this fact certainly affords no logical reason for rejecting its objective—a grasp of the world as a functioning whole. The social sciences, to which geography is in many ways akin, have similarly wilted under a boycott by the pure scientist based on the like grounds : that they deal either with the obvious or with the imprecise. " Voices are still raised (wrote Dr. Julian Huxley not many years ago) proclaiming that social science is a contradiction in terms, that current affairs are not intrinsically amenable to scientific method. Those who hold this opinion are, I believe, wrong. They are confusing the methods of natural science with scientific method in general. Social science differs inevitably from natural science in many important respects, notably in its lesser capacity for isolating problems, and more generally in its lesser degree of isolation from other aspects of human activity and its greater entanglement with problems of value. It must therefore work out its own technique and its own methodology, just as natural sciences had to do. . . ." A beginning has now been made of developing methods of sampling and of group investigation in sociology, where, as in geography, the impossibility of isolating a " pure " problem means that a number of diverse skills must be brought to bear upon it. But so thoroughly has the force of education and example indoctrinated us all with a belief in individual specialisation as the only road to success that the process of projecting and merging the individual mind into the group mind is found extraordinarily difficult. This is the more so since group work like team work requires careful planning, and mere mention of a planned investigation is at once construed into an attack upon scientific freedom. The rigid attitude hitherto taken up by the Royal Society as to what constitutes " science " has undoubtedly borne very hardly upon geography and sociology alike, although the term " experimental philosophy " was certainly not thus narrowly interpreted by the first Fellows, men like Bishop Wilkins, Robert Hooke, Sir William Petty and Edmund Halley, to judge by the actual papers they read to the Society. However, the situation is once more changing, and it is apposite to quote again from the words of the Society's advocate in 1668. The Rector of Bath expressed the opinion that "Those that attend there (that is to say, at the Royal Society's Rooms) never see the least inclination to any unhandsome opposition or uncivil reflexions, no bold obtrusions or confident sayings. The forbearing such Rudenesses is indeed a Law of that Society, and their Designs and Methods of Inquiry naturally form men into the modest Temper and secure them from the danger of the quarrelsome Genius."

It is now possible to say that in spite of the imperfect methods and techniques and the almost negligible funds at their disposal, in spite, too, of their anomalous position between the arts and the scientists, geographers are convincing a slowly widening circle that a careful consideration of the circumstances of time and place and their differentiation from region to region, from one country to another, is of assistance in illuminating or solving their particular problems. Archaeologists, historians, economists, biologists, as well as industrialists, agriculturalists, physical planners and members of the Services, have increasingly sought geographical information and advice and

made use of geographical literature. Indirectly one result has been to widen the field of employment of trained geographers, which in turn should lead to an intake of students of higher mental calibre than hitherto.

It is, however, true of all specialists, and not only those in the academic world, that however meticulous they may be in their own researches, however cautious their conclusions in their own field, they are yet impatient of the degree of specialism which they encounter in other branches of knowledge. Failing brief, clear-cut answers to complex questions, they skim the literature and come away with first approximations only. Examples of what I have in mind will occur to you all. The brilliant study of Prehistory entitled *The Personality of Britain* has a geographical basis which would gain immensely by refinement. A recent monograph on *The Location of Industry*, in which a valuable index of concentration is devised, is gravely marred by insufficient regional differentiation. In the erudite and far-ranging *Study of History* by Arnold Toynbee, again, the broader effects of the geographical environment are examined at considerable length. Yet the geographical reader cannot but be severely shaken when he finds, for example, a conclusion based on the assumption that the Jordan Valley, save in point of size, presents a similar environment to the valley of the Nile. The geographer, of course, is in constant danger of similar lapses, for he is almost always at work on the borderline of some other specialism and has often exposed himself to well-deserved censure. There is, however, a growing body of literature, upon Historical Geography for example, which has stood the test of criticism. Most of us have read the stimulating analysis of the loam-terrains of south-eastern England in their relation to early settlement, and mention may be made of a full-length study of the debatable frontier between Italy and Yugoslavia, and of several interesting papers on the belt of countries forming the so-called *glacis* abutting on Soviet Russia. A geographical study of the regions of Germany has had topical importance, as has also a composite picture of the geographical background to the Palestinian problem presented by one of our colleagues who accompanied the Anglo-American Commission to that country. If Professor Chadwick's suggestion of regional studies of the history, culture and material environment of foreign peoples as a much-needed part of the University curriculum bears fruit, geographical collaborators will not be to seek. In the physical field a monograph on the morphology of our coasts, contributions of great social value to our knowledge of micro-climatology, and a survey of soil erosion in New Zealand come to mind as examples of what geographers have recently been doing.

Cartography is, of course, our major tool, one of our keenest instruments of research and the best means of geographical expression. Maps of population, of production, of circulation point to the lamentable consequences of partition, whether in Palestine, in India or in Germany. Our forefathers explained the diversity of resources between region and region as the Creator's device for bringing men together in peaceful, friendly business intercourse. To-day that diversity is exploited as a political weapon.

A new light on regional differentiation in the past will be cast by the mapping of the Domesday survey of 1086, which is now in progress. Comparison will be possible with that modern Domesday, the *Land Utilisation Survey*, which provides us with basic material both in pure and applied

geography, and has become part of the accepted equipment of the physical planner. Further light is being thrown on the stability of land-use where the soils of high quality are concerned by the laborious reconstruction of field maps by research workers interested in historical agriculture. These maps show how the land was farmed early in the nineteenth century, and in a few cases it has been possible to reconstruct the exact country scene as far back as the days of the Armada.

It is very desirable that these investigations of agricultural land-use should be matched by an equally comprehensive mapping of urban land and building use in all our towns. Considerable work on urban geography has already been carried out at Oxford, and elsewhere there have been several individual surveys of towns, their functions, social structure, regions of circulation and relations with the adjacent countryside. But there has been no co-ordinated over-all study. Researches of this character are, however, very necessary if faulty town and country planning is to be avoided, for we need to obtain a much firmer grasp of the anatomy and growth of towns as functioning organisms reflecting the circumstances of place. It is apparent to geographers that those experts who plan to " create " new towns, and to " decant " people in their tens of thousands from one area into another, have little appreciation of the interplay of geographical factors which results in one sort of human agglomeration growing up just at this place and another just at that. Looked at either in detail or as a whole the urban pattern of Britain, or indeed of any other country, is not a random one.

Many physical planners, however, do seek the co-operation of geographers who, in particular, have been associated with them in examining the potentialities of the Development Areas. Experience has thus been gained in group work as distinct from team work; that is to say, persons of different skills—architects, engineers, industrialists, sociologists, geographers—have got to work together upon particular problems of reconstruction. While the first results are naturally not completely satisfying, they are well worth careful study. Such publications as *English County* (Herefordshire), *English County Town* (Worcester) and the survey and plan for *Middlesbrough*, besides monographs on Liverpool, West Cumberland, Tyneside and South Wales, are among examples that come to mind. Nor should we overlook the very important output of the Maps Office at the Ministry of Town and Country Planning directed and staffed by geographers.

In harmony with the general theme of this meeting of the British Association, I have been touching upon aspects of geography which have social applications. War is, however, also part of our social history, and the older among us have twice experienced the sudden rise of geographical prestige which occurs in war time. In broad terms, geographical intelligence of every kind then becomes vital, and while many of our number were seconded to various Ministries during the war—to the Ministries of Information, of Economic Warfare, of Supply, and so on—others have honourable records of organising and supplying geographical intelligence to the various Commands, and in many cases of adapting, interpreting and applying such intelligence to the novel and intricate needs of commandos, bomber-pilots and others engaged in particular operations. Exactly how they worked cannot be disclosed for reasons of security, so these very few words must not be regarded as an index of the importance of what they accomplished. Nor

can I speak in detail of the groups who compiled a library of geographical volumes to the specifications of the Admiralty, although it must be emphasised that these and the Terrain Handbooks that came from the intelligence service suffer very much from the geographical standpoint because of the gazetteer style imposed from above. Many of our younger geographers helped to fill the rapidly expanded ranks of the Meteorological Branch of the R.A.F. both as instructors and forecasters, while the first officer commissioned in the new Meteorological Branch of the Royal Navy was a university geographer. To cope with attack and defence in the third dimension demanded a new type of meteorology, a meteorology in depth, or rather in height, that had not hitherto been part of the sailor's equipment.

There can, of course, be no applied geography unless there has first of all been an adequate pure geography. Preoccupation with the genesis of slopes and facets, for example, reflects the fact that in a sense all geography springs from an exact knowledge of surface relief. The layman, however, must have been really puzzled to learn that a Gold Medal of the Royal Geographical Society had been awarded for researches in Geodesy, and not less so when he learned what the word meant. We ourselves are perhaps startled to hear it suggested that the exact size and shape of the earth may be elevated to the rank of " top secrets " : startled until we remember that success in mechanical warfare depends upon pin-pointing the target—a target out of sight round the bulge of the earth. Yet since we possess maps of the world the problem might seem to be one of computation only until we recall that a mere fraction of the land surface has been covered by instrumental survey of the order of precision really necessary, and that the tying together of such exact surveys as are complete has often not been done directly on the ground (indeed the oceans intervene) but by calculation based on an assumed figure of the earth. If the map of Burma were much less than the ten miles, or ten minutes of the arc, out of the true that has been hinted, then while radar-directed planes or atom-bomb-loaded rockets might reach the latitude and longitude at which they were aimed, they would not reach their targets. The earth as a globe has proved progressively disappointing. Eratosthenes, over two millennia ago, assumed it a perfect, static sphere and hence deduced all its dimensions from a single measurement. Ptolemy, in his turn, fitted the map to the graticule by simple arithmetic on the same assumption, having a mere dozen or so of astronomical " fixes." When members of the French Academy first measured the degree by triangulation along the meridian in the seventeenth century, the scientific world believed that they had found at last a universal standard of length which could always be recovered if it were lost. Only Robert Hooke became immediately doubtful. Would not a spinning globe be spheroidal in shape ? Were the poles constant ? Was the earth subject to radial shrinkage ? To-day we can only say of the earth that it is earth-shaped—a geoid : the surface of equal gravity potential has no geometrical regularity, and we still know too little of its irregularities to be quite certain of destroying Hollywood from Timbuctoo.

For a country to be ill-mapped might, it is clear, provide a species of camouflage. But for the fighting man, apart from exact position, there is no detail of the terrain so minute as to be completely unimportant, and the future lies in photogrammetry—in stereoscopic surveying and mapping from

the air from which there is no defence. The remarkable results obtainable by ordinary air-photography in the fields of archaeology and structural geology have long been familiar, but great technical difficulties had to be overcome in plotting accurate maps from stereoscopic air surveys which provide precise data for contouring. The creation of a University Chair in Photogrammetry and Surveying, associated with ample funds for equipment, reflects an important advance in cartographical technique and holds out immediate possibilities of rapid and continuous mapping for civilian purposes. The scientific interpretation of air-photographs has also played a very important part in warfare and has occupied many trained geographers. Not only do they afford means of picking out targets and examining enemy dispositions, but inferences can be drawn from them as to the nature of the ground, the degree of forward visibility, the lines of movement possible and degree of cover afforded for different categories of troops and vehicles. A skilled user can pick out the different types of forest, woodland and bush and hence forecast the conditions as regards varying difficulty of penetration and amount of cover. Varieties of crops can also be detected, vineyards, rice-fields, sugar and so on, and these give a clue to the terrain, whether water-logged, well-drained, sloping, intersected by ditches and so forth. Vegetation, crops and soil types all vary as to the extent to which the disturbance or break-down caused by troop and vehicle movements leaves results easily detected by air reconnaissance, and this too can be foreseen by photographic study. Some of you will perhaps remember photographs of our English Fens which picked out the *roddons*, the vanished silt-filled watercourses through the peat, an example of how soil-texture differences, invisible on the ground, can be detected from the air.

Colour photography and photography with different wave-lengths is even more effective. It can make nonsense of camouflage and reveal conditions at depth both on land and sea. In peace it could provide far more precise crop-forecasting than farmers' estimates, and be cheaper than collecting doubtful statistics.

A difficulty arises, as all who have used the French 1 : 50,000 maps are aware, when much detail of crops and vegetation is plotted on the topographical map, for it is apt to obscure the contouring and hill-shading—that is to say, equally vital information about slopes. Our English survey maps achieve clarity by leaving out much that we should like to know, and the general question of map design, map content, map conventions and map draughtsmanship is worth more serious attention from geographers than it has yet received. To take but a trivial example, the ordinary draughtsman, trained only to use his pen, is little concerned if his neat placing of a name should result in ambiguity as to the exact village or topographical feature to which it should be attached. Yet such an ambiguity may have disastrous consequences in war, and is, of course, undesirable at any time. Nor, too, should ambiguous or unexplained conventional signs be tolerated; and in this connection an anecdote told to me by the well-known physicist who supplied me with this material about Geography in War is very instructive. The line drawn on the map (a derivative of the old 1 : 80,000) to mark a certain Normandy river in the line of advance was broken between two points. A draughtsman's error was assumed and the course of the river reconstructed. Actually, however, it was limestone country and the water

had simply disappeared underground. Further deductions were however made from the size and character of the drainage area as to the approximate width and depth of the river in its different reaches, and dispositions for crossing it made accordingly. But in point of fact the upper waters above the " perte " pursued an independent course by underground channels to the sea, while the beheaded river when it reappeared was an inconsiderable stream that presented no obstacle whatsoever. One moral of this tale seems to be that geomorphology should be part of the education of at least some elements of Army personnel. A foreknowledge of the whole assemblage of surface features to be expected in a particular type of country, whether chalk, limestone, clay, formerly glaciated, rejuvenated or whatever it might be, would allow of valuable forecasts as to water supply, vegetation, location and grouping of habitations and many other matters. Conversely the presence of certain tell-tale features on the map would indicate to the trained observer the character of the terrain : the boundary between chalk and clay, for example, with all its implications for good going, is sharply marked. Modern geography, however, is not included in the education of the young officer, and an examination of his Map-reading Manual, excellent although it is in many respects, reveals an astonishingly meagre and out-moded vocabulary for the description of surface relief—a vocabulary that can be traced back to French military manuals of the last century. An object for which we have no name is likely to go unnoticed, or at best be very clumsily described, and an officer's reconnaissance notes would certainly gain were he master of the rich and precise topographical vocabulary which geography employs.

In general, however, the fighting forces had to master their geography as the war proceeded, and a most remarkable piece of *ad hoc* geographical research and geographical synthesis was carried out as part of the preparation for the beach landings of D-day. Of the part played by geographers in intelligence work relative to the Sicilian and Anzio beaches I have only vaguely heard and so cannot pay them their just tribute. In respect of Normandy the problems were sorted out, the right questions asked, the methods of answering them suggested and the totality of information brought together by the physicist I have already mentioned.

Land, sea and air were alike involved, and a simple fact, familiar enough to geographers, that there is no such thing as a coast " line " except on small-scale maps was brought into sharp relief by a question of etiquette. Exactly when, in the case of amphibious craft, or of men and vehicles moving in the sea, was authority transferred from the Navy to the Army ? Actually the major material problem was to provide " going maps " for vehicles of very varied types, from jeeps to tanks, across a belt which embraced the adjacent sea-floor as well as the beach itself. Slopes, depths, and the character, texture and weight-bearing properties of the littoral deposits, both exposed and concealed, had all to be determined and their distribution mapped : but all had to be done in England or from the air. High Authority, however, typically mistrusting scientific deduction, did send out a single commando equipped with augers to bring back a sequence of cores obtained at intervals along a single traverse up the beach. So, too, does the airman, mistrusting his instruments, dive down through the clouds for a fatal " look-see."

It might, of course, be thought that the Admiralty Charts, with their

French counterparts, together with the large-scale survey maps of France—copies of all of which were in our possession—would supply all the needful information. This was not so : there was mention of charts with an ancestry going back to 1780, and it is certainly the case that the foreshore and the inshore waters too shallow for ordinary shipping form a sort of no-man's-land receiving little attention on map or chart. The situation is further aggravated by the fact that there is no terrain more subject to rapid and irregular alteration. Not only are sweeping changes brought about by the shore-line processes of erosion and deposition, but sea-level is subject both to short-term and secular change. " The sea level " like " the coast-line " is a concept rather than a reality.

While one is tempted to think that, in spite of these obvious difficulties, the physicist was ill served by the regional geographers (a variety of the species not to be found in every university), yet it is a fact that he started his researches in the local guide-book, from which he learned that the peasants used to go out at low spring tides and bring in a mysterious fertiliser from the sea. This was not seaweed as one might at first suppose, but peat. Extensive peat-beds, the counterpart of our submerged forests, but possibly associated with a later positive change of sea-level, lie off the shores of Calvados, and these and other likely sub-aerial features, including in-filled river-channels associated with a drowned coast, had to be taken into consideration. Accumulations of mud and silt are not, of course, necessarily the result of change of sea-level, and the chance clue of a place-name on the map indicating a seaport where none now existed prompted some historical research. This resulted in the information that the name was indeed the sole relic, other than documentary, of a once flourishing mediaeval harbour which had become choked up subsequently to the fourteenth century. It must not be supposed, of course, that our physicist turned directly from accustomed researches on the spatial relations of the atoms in the molecule to the perusal of old French manuscripts. He had his specialist advisers, including his geographical assistants, to whom all credit is due for their services. The documentary sources which they ransacked included the proceedings of local scientific societies—archaeological, botanical and, particularly, ecological—and, in particular, one hundred years of the records of the Linnaean Society of Caen, which revealed, for example, the points at which hardy folk could cross the marshes or scale the cliffs.

The tides—which, of course, varied the depth of water all round the clock—presented a difficulty, since, as it appears, neither the Admiralty nor the Liverpool tidal institute could supply the most recent French tide-prediction tables, nor was it realised that these could have been obtained through the French Resistance movement. Supposing the rise and fall of the water to be known and the distance between high and low tide-line observed, then the beach gradient, an essential piece of information, can be calculated. To check and revise tide-tables indirect methods were therefore resorted to, some applicable to Normandy, others to the Mediterranean and the Pacific. It was ascertained that wave velocity (which could be observed) was a function of depth, while in the absence of waves colour served as an indicator. Still, turbid water required yet another method, and the depth was ascertained by measuring the height of the plume of water raised by dropping a bomb of known calibre, the two phenomena being related. All these

methods gave results within the order of accuracy required. Another problem which was solved was the determination of the height of the surf as it fell on the beach; for too much surf, such as was encountered in Africa, would obviously interfere with landing. It was found that the surf dimensions are a function of the height and wave-length of the swell, and since the run of the swell can be observed far out to sea, while it is set up by the previous and not the current meteorological conditions it is susceptible of exact prediction. Surf prediction proved vital in the Pacific landings, which fortunately were not made in the early period of the war.

In regard to the beach material and under-water deposits, it was necessary, of course, to know not merely the character of the superficial layer, but its thickness and the nature of the substratum on which it rested. A jeep, for instance, could run across mud or peat if there was a comparatively thin layer of firm sand or shingle on top of it. A heavy vehicle, on the other hand, would break through the crust and become hopelessly bogged or even disappear. When, however, mud or clay formed a thin veneer over sand, the situation was reversed. The light vehicle became immobilised while the movement of, say, a heavy tank, which could get a grip on the substratum, was hardly interfered with. To ascertain the limiting conditions imposed by various types and thicknesses of stratification, experiments were made in an English coastal area which matched as nearly as possible the problem area in Normandy. Further information was obtained by producing and observing bomb craters on the spot. Sand craters, as every beach-digging infant knows, quickly fill and disappear, whereas mud-craters hold water and have very definite stability. Geographical "matching," incidentally, allowed the rehearsal and subsequent magnificent success of a spectacular assault on a German battery on the top of a 200-ft. vertical cliff.

Many new ideas regarding shore-line processes emerged, in particular as to the relation between wave-length and deposition, and the part played by the fetch of the waves in producing a long "simple" beach as opposed to a compound beach made up of separate units. The name of Brigadier Bagnold, whose researches between the two wars into the motion of desert sands proved so fruitful, was associated with these new investigations; and it was discovered, for example, that the observed juxtaposition of shingle and mud arises from the fact that down to a limiting size pebbles are broken down by hammering and splitting, but below that size by grinding and trituration.

For a clear picture of all that was accomplished for pure science in the course of these investigations we must await published reports. My immediate purpose in presenting this sketch of Beach Reconnaissance is to illustrate the importance of geographical knowledge and also to show how it is only by knitting together a great number of separate threads that we can describe and interpret the totality of terrestrial features that gives its distinctive character to each part of the earth's surface.

In one shape or another, the idea of the map as a means of presenting to the eye this totality of features has been continuously in the background of this discourse. And I wish to press the point that if the recognition of the regional differentiation occurring within the framework of the earth as a functioning organic whole is to become, as it should, part of the mental

background of every thinking person, then much more attention should be paid to maps and globes. A *National Atlas* would display the diversity in unity which characterises every aspect of the physical and human geography of our own country. A Rolling Globe and its accompanying transparent hemisphere carrying a universal graticule of true bearings and distances is the latest device for curing an obstinate adhesion to the distorted world view inculcated by Mercator's map. "Science is a study of the inter-relatedness of things." In geography we study each country, each region, as an integral part of One World, but it is still true that one aspect of our work must be to "remove the Rubbish, lay in the Materials, and put things in order for the Building."

Presidential Address to Section E (Geography) of the British Association for the Advancement of Science, delivered at the Meeting in Dundee on August 28, 1947.

THE LANDSCAPE OF NORTHERN BEQĀ', LEBANON

By F. D. N. Spaven, M.A.

The great rift valley running north through the Gulf of 'Aqaba, the Dead Sea, the Jordan valley, and Lakes Tiberias and Hūle, reappears in Lebanon in the higher lying valley of El Beqā' (French : Bekaa), foundered between the Lebanon Mountains of the Mediterranean coast and the Anti-Lebanon Mountains bordering the Syrian desert (Fig. 1). The Beqā' is some 80 miles in length, and extends from the foothills of Mount Hermon north-eastward to its opening on to the plain of Homs in Syria ; along with its tributary wadis and adjacent uplands it forms the large Beqā' province of the State of Lebanon. The northern half of this major valley region, beyond Ba'albek, has many distinctive features of its own, while the variety of scene and magnitude of scale characteristic of Lebanon and western Syria are strikingly displayed in it.

The valley floor of northern Beqā' is nearly 40 miles long and 5 to 8 miles across—appreciably narrower than farther south—and it has a general elevation of 3000 ft., falling away to less than 2000 ft. at its wider northern opening. Structurally the valley trough is formed by a major downfold in the limestone formations which border it in massifs of 5000-7000 ft. (Fig. 2). To the south-east is the broad upland of Anti-Lebanon, falling to the north but bounded on the east by a long dissected ridge with peaks over 8000 ft. high, which forms the Lebanon-Syria frontier. To the north-west is a series of long ridges, spurs, and wadis leading up to a narrow plateau ; this lies at the base of a great NE-SW fault-line scarp rising 3000 ft. to the summit ridge of the High Lebanon (Qurnet es Sauda, 10,131 ft.) ; a remarkable road built by the French Army climbs up and over this scarp at the Col des Cèdres (8745 ft.) (Fig. 1). But to the traveller moving up the Beqā' from Ba'albek, the more immediate prospect on his right seems more impressive, for here the bare grey-brown rocky slopes rise precipitously above him for 2000-3000 ft., often revealing the steep north-westward tilt of outcropping strata ; the plateau edge stands out sharply, with only a few wadis, deep and narrow, cutting back into it, and continues all along the eastern sky-line.

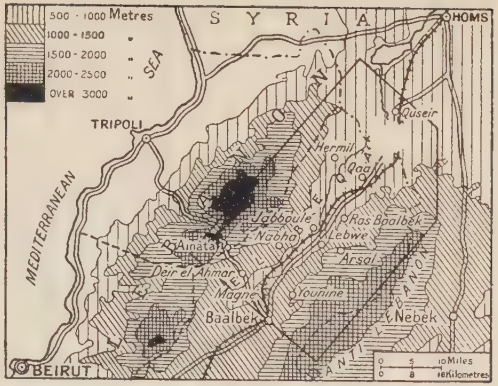


Fig.1 N. E. Lebanon

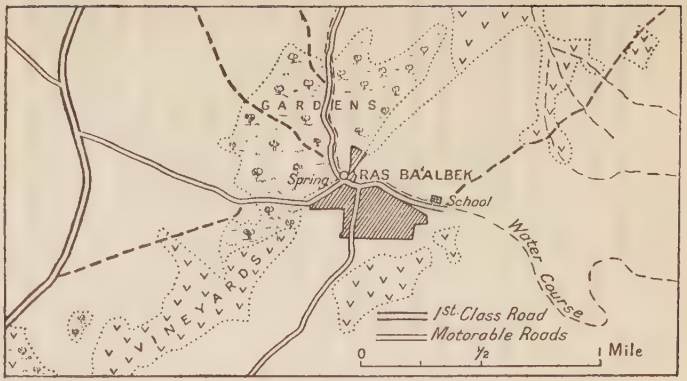


Fig. 3 Village Site

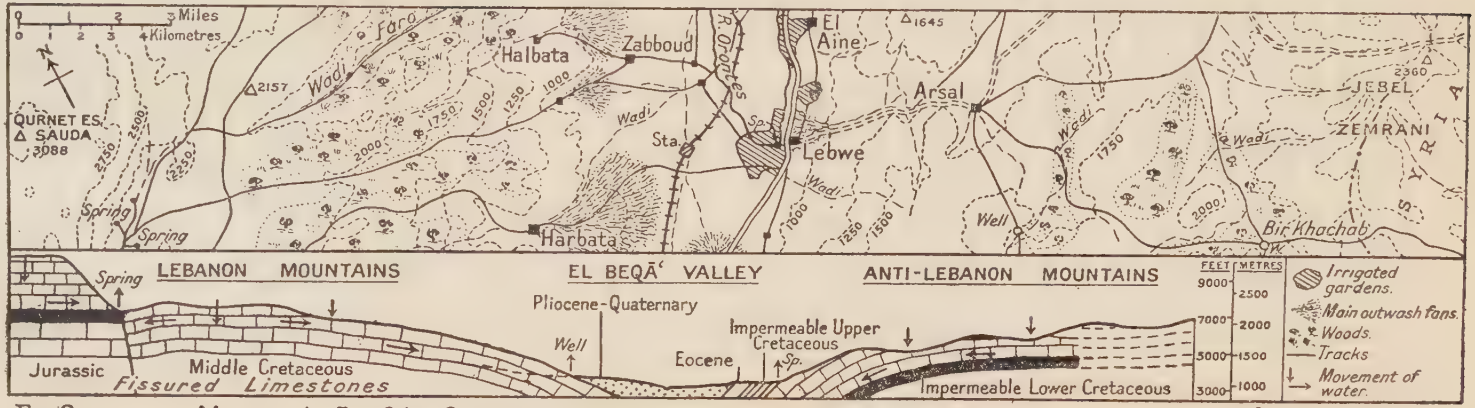


Fig.2 Map and Profile Section

Geology approximate

Generalised from fig. 41 Op. cit 1

The valley floor, like that of southern Beqā', has a thick covering of geologically recent deposits, but differs from it in being by no means a flat expanse of alluvium. In fact, much of it consists of a series of coalescent outwash fans or cones, spread out from the mouths of the main mountain wadis to a radius of up to 2 or 3 miles. The larger older fans, probably of late Tertiary age, fall some 500-700 ft. from top to bottom, with slopes of the order of 1 in 20, slightly convex at the top. They are partially dissected by recent stream gullies or shallow wadis, in which the outwash detritus of the fan is seen to consist largely of solid bedded conglomerate, often with a high proportion of carbonate cement; the surface consists of bare flat slabs of this rock, together with scattered stones and boulders especially near the top of the fan, and some stretches of coarse soil. The fans along the base of the more extensively dissected western mountains are generally more numerous, but smaller and steeper, than on the Anti-Lebanon side. The most recent short and very steep fans along the foot of both massifs are of desert scree pattern, with coarse, loose detritus, and shallow torrent beds changing course from winter to winter. In the centre of the valley, its general course shaped by the outer edges of the larger fans, runs the River Orontes; it has narrow alluvial flats throughout most of its length, even in the north, where it is incised in a gorge, with a depth of 300 ft. below Hermil. In one or two areas, such as north of Lebwe (French: Laboué), where the fans are small or absent, the valley floor does open out in the centre to an almost flat plain with finer and deeper soil materials.

In 1942, when the Eighth Army had to fall back almost to the Nile Delta, there was considered to be a strong possibility that the Germans would invade Syria through Turkey; had they done so, they would have met with a warm reception in the Beqā', where preparations were concentrated at the neck of its northern funnel-like opening, behind the natural defence line formed by deep gullies in two of the highest and longest outwash fans, thrust out to the Orontes from Wadi Hemaite in the east and Wadi Fara in the west.

The grand scale and contrasts seen in some of these relief features are paralleled by the splitting of the year into two long and very different seasons. In the summer, from May to October, there are five or six months of drought and hot sun, when the high ridges and peaks perhaps lose some of their impressiveness under clear, empty skies, varied only by occasional dust clouds or heat haze. Although a mean monthly figure of 80° F. is reached in the valley in August, summer temperatures are not so overpoweringly great as in the Syrian desert and along the Euphrates, nor are they unpleasantly combined with high humidity as on the Mediterranean coast. In January, on the other hand, mean monthly temperatures of around 41° F. in the valley and under 39° F. in the mountains are similar to the south-west and east of the British Isles, and in contrast to 57° F. at Beirut.[1] The winters in fact are wet, cold, and stormy, and this relative severity is suggested even in late summer by evidences of considerable recent erosion on the lower mountain slopes, by some stoutly built houses in the villages, and by rather dirty remains of snow-drifts high up on the NE slopes of the Lebanon summits—a reminder of the popular ski-ing grounds of the winter tourist season, and of occasional snowfalls even in the valley itself. Lying as it does in the rain-shadow to the east of the highest mountain range in greater

Syria, most of the valley is within the steppe zone of 10 to 20 inches of rainfall a year, with many characteristics of a desert climate in summer, but enough winter rain to support grasses and some cereals. The nearest rainfall stations are Ksara, in the south Beqā', with 25 inches, and Homs with 13 inches, so that the totals here may be estimated as little more than 20 inches in the south-west, decreasing to about 15 inches in the north-east. On the Anti-Lebanon there are certainly some increases, while in the western mountains there is a rapid increase from 20 inches up to some 40 to 60 inches on the High Lebanon.

A most striking paradox of the summer landscape is that despite the absence of rain for five months, during which stream-beds and gullies are dried up and the country has a generally desolate appearance, the Orontes still maintains a steady flow of cold, clear life-giving water ; near Hermil it fluctuates only between a minimum of 280 cubic feet per second in November and a maximum of 420 c.f.s. in May and June, following the melting of the snows. This contrast, like many others, is indicated by Arabic terms—*nahr* for a perennial river, and *ouadi* or *wadi* for the more usual desert-like water-course, dry in summer but full or occasionally flooded in winter. Nahr el 'Asi, or Orontes, is ' the contrary river '—contrary not only in its perennial flow but also in its direction of flow from south to north, for the Nahr el Lītāni of the southern Beqā', and all the other rivers of the Levant, flow to the south or west. Following the Orontes upstream one comes to a number of springs, of which the largest are at Ain ez Zerqa, or Source de l'Oronte, on the east bank of the gorge below Hermil, and at Lebwe, a mountain-foot village farther south. At these places the water gushes out powerfully, at Ain ez Zerqa—' the blue spring '—into a deep pool which is wonderfully inviting on a hot, dusty afternoon ; but its low temperature provides a shock to bathers, enough to prevent any strenuous activity for some time afterwards ! These springs and many others are the outlets to a drainage system which is in effect a vast reservoir of the winter rains and snows falling on the Anti-Lebanon and Lebanon uplands. A high proportion of the run-off from these, and from the snow-drifts which do not melt until early summer, remains on the undulating plateau surfaces and basins of interior drainage, and is absorbed there by percolation downwards through the fissured limestone strata ; it is then guided by impermeable marly beds to issue in springs mainly along the base of the Anti-Lebanon and the High Lebanon [1] (Fig. 2) ; to the east of the latter, however, impermeable strata are not usually found near the surface, and springs along most of the north-west side of the valley are weak or absent.

Since the whole life of this region for nearly half the year is dependent on supplies of underground water, the land use pattern of the landscape is greatly affected by the occurrence of springs and the course of the perennial stream or irrigation channels which spread out from each of them. In the irrigated gardens along the narrow alluvial floor of the Orontes, and on easy slopes below the springs of many mountain-foot villages, such as Lebwe and Ras Ba'albek (Fig. 3), there is a striking concentration of dark green colours standing out from the prevailing pale dusty browns and greyish creams of a semi-desert background. These attractive gardens contain tall poplars and walnuts, fruit trees such as apricot and fig, and a variety of vegetables ; while in the outer plots, which are less regularly watered, there

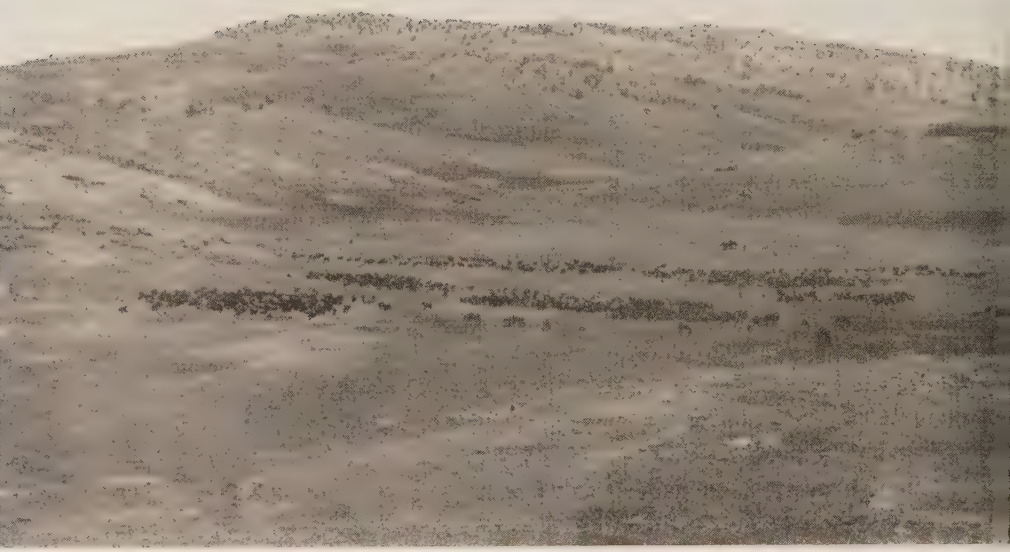
are olive trees, water-melons, and patches of cereals. Their cultivation demands close attention and organisation, as does the sharing out of irrigation water among the peasants working in each *ghuta* or Syrian oasis of this kind. Under the supervision of the village *mukhtar*, or a specially appointed leader, water guards open and close appropriate sluices so as to direct the main flow of water along any one of the channels branching out from the spring or stream. The channel for each sector of the ghuta receives this flow for an allotted period of hours or days, long established by tradition ; it is some fraction of the total cycle of irrigation—that is the time required, usually one to four weeks, to provide all the separate plots in the ghuta with one full watering.[2] Using their mattocks, a few villagers whose neighbouring plots are affected divert the flow of running water off the channel, and guide it through temporary branch ditches into each garden in turn, and even round the base of each fruit tree. These operations are often carried out after sun-down, by moonlight, to the accompaniment of much excited shouting and dashing about.

A less intensive irrigation system sometimes spreads out beyond the gardens, to provide an infrequent supply of water to fields of maize and other summer cereals on flat or gently sloping lands with some depth of soil—for example, along the Orontes, and in the area north of the Lebwe spring, over which there extends a network of ten irrigation channels. Of the dry-farmed lands, the most distinctive in summer are the vineyards, which spread out over the smoother foothill slopes behind and on either side of the villages. Many of the grapes are used to make *'araq* spirit, a popular local drink with anti-malarial properties, among others. Dry tracts of thin, stony soil growing meagre crops of winter wheat and some barley are widely dispersed, often some miles away from a village, especially in the north-east. Here, ploughing is not much better than a rough scraping up of a few inches of earth and stones by the usual wooden plough, dragged along between two donkeys ; oxen are used nearer the villages and on the partially irrigated lands. In contrast to this, modern steel ploughs, tractor-drawn, are sometimes to be seen working the extensive flat stretches of deeper soil in the southern Beqā'. It is notable that most of the outwash fans, with their hard rock and unweathered stones and boulders, are avoided by the cultivators, except for a few pickets and strips. In summer most of them are simply barren desert tracts supporting no more than some scattered camel thorn scrub.

The north-eastern end of the Beqā', where it opens out into undulating steppe falling away to the plain of Homs, is of exceptional interest in its variety of water-supply schemes, past, present, and future. The arid, almost empty area stretching for 15 miles between Ras Ba'albek and the Syrian border, has only one village, Qā'a. It is supplied from the Lebwe spring by a small 14-mile aqueduct, which operates a number of old corn mills en route. Indistinct remains to the south-east of Qā'a, running along the contours at the base of the Jebel Haouerte, suggest that most of this aqueduct formed the SW portion of Queen Zenobia's water-supply system for Palmyra, which is said to have run from Lebwe. Taking off from the Orontes gorge on the south side of the Syrian boundary are the remains of two tunnels, possibly of Roman origin, connected to the surface by a series of short excavation shafts ; one runs SE for 3 miles into a dry water-course,

ANTI-LEBANON: ĀRSAL VILLAGE

THE ORONTES NEAR HERMIL



ANTI-LEBANON: GOAT HERDS AT BIR JEBAB

BEQĀʿ VALLEY NORTH OF LEBWE

ANTI-LEBANON PLATEAU: LIMESTONE OUTCROPS AND SCRUB

A CONSIGNMENT OF ILLEGALLY CUT TIMBER

RAS BA'ALBEK

VILLAGERS, RAS BA'ALBEK

the other northward. On the Syrian side of the boundary, however, five small irrigation channels spread out from the Orontes, and a wide extent of cultivated land now appears, SW of the large village of Quseir. Two main canals in this latter area, and two dams and generating stations in the gorge upstream towards Hermil, form the southern end of a far-reaching irrigation and hydro-electricity plan for the Orontes, prepared under the direction of the French High Commissariat a few years before the war ; part of this scheme in the Homs area has been completed.[2]

On the slopes of the western mountains, evergreen oak bushes and pine trees are dotted about in a thin and open scrub, up to about 7000 ft. On the southern slopes of the High Lebanon, at 6200 ft., is a grove of cedar trees, the largest and most ancient remnants—up to 1500 years old—of the extensive cedar forest of Lebanon referred to in the Bible ; these trees are held sacred by the Maronites, who have carefully preserved them. Despite an adequate rainfall, a heavy toll of all forests has been taken by centuries of cutting and burning, while regeneration has been hampered by grazing goats and by severe soil erosion on the slopes during winter storms.

For similar reasons, and also because of a generally lower rainfall, the Anti-Lebanon supports only a very open scrub woodland, which is confined to a few parts of the highest wadis and plateaux between 5000 and 8000 ft. In summer, one may still come upon diminutive rock lizards, and, curiously enough, wasps, near these summits. Herds of goats, moreover, are to be seen, seasonal migrants belonging to stock-raising villages in the Beqā' and the eastern steppe country. What they feed on in these bare rocky wastes, apart from the shoots and seedlings of an occasional stunted tree or bush, is something of a mystery, but there are a number of good wells at junctions of the main wadis and in the open depressions which form their heads. It is equally surprising to come upon a solitary young Arab doing some rough ploughing at an altitude of 7000 ft. Yet in places the limestone has weathered to a fine rusty brown powder, albeit with many stones in it, which no doubt makes a fertile soil after rain ; this is found on the floors of the more open wadis, in the undulating depressions of interior and underground drainage, and in the similar but smaller hollows between fantastically sculptured rock outcrops. In the wide depression round Ārsal village (4600 ft.), there are extensive roughly ploughed lands, and also many vineyards. A few other high-lying villages, above 5000 ft., are now in ruins. But some of their fields, like all the more remote lands, are still cultivated for winter cereals by peasants from villages on both sides of the Anti-Lebanon, who carry up their light wooden ploughs on donkeys, either individually or in a family group. In the mountains west of the Beqā', on the other hand, high-lying cultivated tracts are much less apparent, for here there are many steep slopes and soil erosion is more active. But south-east of the spring-line at the base of the High Lebanon, there is more open country, with well-watered pastures such as Merj el Homeur, fields, and a few villages, *e.g.* 'Ain 'Ata (5500 ft.).

Most of the villages of the Beqā' are situated in the mountain-foot zone, along both sides of the valley, where water supply is available in springs or wells, and where a variety of land uses has been developed on contrasted land-forms and soils within a convenient compass of each settlement (Fig. 3). As noted earlier, springs are more frequent and more powerful on the south-

east side, at least in the middle sector of the valley (Fig. 2), and here there are six villages in as many miles between Lebwe and Ras Ba'albek. On the other side, more reliance has had to be placed on wells, or small springs, at or near the wadi mouths; there are no irrigated gardens, and cultivation is in any case restricted by the larger extent of outwash fans; villages are fewer, smaller in size, and often dirty and poverty-stricken in appearance. There are, however, exceptions to this in Hermil, a large, well-watered village standing alone in the extreme north, and Nabha and other places in the south-west. The main wadi mouths have a further importance as village sites, on both sides of the valley, in that the rough tracks which lead from them into the mountains give the least difficult approach to the high-lying patches of cereal cultivation and the summer grazing grounds. These tracks include a number which are motorable in summer—for example, from Lebwe across to En Nebk; small camel trains also move across the mountains and along the valley. The mountain-foot zone no doubt has an advantage from the health point of view too, in being above the flatter river-side zone where malarial mosquitoes are most likely to breed.

There are, however, a few villages in the valley centre, such as Zabbūd in the extensive area of cultivation north-west of Lebwe, El Qā'a with its special water supply and flat land, and one or two villages among dry-farmed lands in the higher rainfall zone nearer Ba'albek. The main road and railway run nearer the valley centre too, but the latter was built for strategic purposes and is mainly a through route from Rayak junction to Homs and Aleppo, with no stations at the villages; the road has a more local importance, though it was improved as a route for through traffic during the war.

Each village usually consists of a compact group of buildings standing on rocky ground slightly above the cultivated gardens, away from their precious irrigable ground (Fig. 3). Inside the village there is constant dust and the glare of the sun on light brown or cream rock, stones and walls, and a strange variety of smells, notably from burning dung; while only a few yards away one moves into the cool, restful shade and clean air of the irrigated gardens. The houses, separated only by a network of narrow twisting lanes, are usually built of mud and stones, with stone window-pieces, doors and verandah arches, and flat timber roofs used for laying out fruits to dry; but there are always one or two solid stone dwellings belonging to elders of the village or returned emigrants. In the larger villages such as Ras Ba'albek, a school, a police post or telegraph office, and a store are often to be found; there may be a church too, if it is one of the Greek Catholic villages on the SE side of the valley, or a mosque on the opposite side at Hermil, which is the main centre in Lebanon of the Mitwalis or Shia Moslems. Much of the life of the village focuses on the spring or well; it is in effect a social centre, for the women-folk come to draw water; the more open space around it, often between the buildings and the gardens, serves as a watering point for goats, donkeys, dogs and camels, while on the shady edge of the gardens some of the men-folk and a few officials or visitors may be found drinking coffee or *'araq*.

This grouping of buildings in compact villages, large and small, is an outstanding feature of the landscape. Even hamlets are confined to a few of the narrow wadis of the west. Isolated dwellings are only to be found at a

few railway stations, and in one or two of the gardens north of Lebwe. " L'habitat dispersé, la ferme solitaire sont ici peu concevables : le climat physique et social leur est trop contraire." [2] Agglomerated settlement is indeed a characteristic of all the steppe country of the Levant ; it is to be related not only to physical factors previously referred to, and to the need for collective effort in exploiting limited natural resources, but also to the need for a united front in the face of a long succession of military invaders, raiding bedouin, rival religious groups, absentee landlords, and over-centralised governments. The *mouchaa* system of joint organisation of work and, originally, joint ownership of land, within each village community, came into being in conditions of insecurity and restricted water supply, and in its turn maintained and reinforced social cohesion. " . . . le fellah est ainsi devenu un être grégaire ; . . . il est un élément d'une conscience collective, plus qu'une conscience individuelle." Though serious social and economic difficulties abound, life in villages such as Ras Ba'albek seems interesting and cheerful enough for the men at any rate, in the variety of their work, in the democratic management of many of their essential affairs, in the colourful personalities among rival families and returned emigrants, and in the not infrequent comings and goings of people and news from mountain and valley.

To sum up some of the characters of this region in relation to its neighbours, it may be considered primarily as lying near the western limits of the zone of semi-cultivated steppe, with dispersed villages usually at Syrian oases. The western mountains, though not strictly within the steppe zone on account of their higher rainfall and forest remnants, are well-nigh bare and empty compared with the closely settled Mediterranean slopes of the Lebanon, with their terraced gardens, village industries, villas, and tourist centres. Nor is the Anti-Lebanon part of the Syrian desert, since its substantial winter rains and plateau and basin soils give it a temporary fertility. The northern Beqā' valley supports fewer and smaller villages than the southern ; rainfall in it becomes insufficient for good farming without irrigation, and soil and slopes are less favourable with a high proportion of barren stony ground ; indeed, despite its water resources, the distribution of settlements is not so close as out on the fertile rolling steppe round Homs and Hama on either side of the Orontes. One gains the impression that northern Beqā' is something of a backwater, hampered not only by social and economic factors which have produced a low standard of living, but also by some of its physical endowments, and politically, by its situation in the far north-east corner of Lebanon. So far as physical developments go, its future would seem to lie largely in afforestation of the mountain slopes, especially in the west, and intensified irrigated cultivation, both in existing fields and on some land now bare, especially in the north-east. Such changes would require capital and technical assistance from outside this region, in particular from the city centres now too separate from it.

The area was visited in the late summers of 1941 and 1942. Maps made at that time by 517 Field Survey Company, Royal Engineers, have been examined, and the following works in particular have been referred to :—

[1] DUBERTRET, L., and WEULERSSE, J. *Manuel de Géographie : Syrie, Liban, et Proche-Orient.* Première partie : La Peninsule Arabique. Beyrouth : Imprimerie Catholique, 1940.

[2] WEULERSSE, J. *Paysans de Syrie et du Proche-Orient.* Paris : Gallimard, 1946. [Review : *S.G.M.*, 1947, 63 (*2*) : 90.]

A COMMENT ON THE NEW PLAN FOR EDINBURGH

By Richard Moira

In the late eighteenth and early nineteenth century creative energy knew no bounds, plans were prepared for the New Town in 1766, and in the next fifty years extensions and additions were promoted and built everywhere. An overall plan was an unimaginable concept in an age of rapid growth and city building. Expansion continued into the twentieth century and reached a climax between 1918-1939, when the City nearly doubled in size, and £38,000,000 were spent on development without the co-ordinating influence of any sort of plan. (Fig. 1.) Nevertheless, for many decades previously there were indications that expansion was not limitless. The coalfields of Midlothian, the farmlands of West Lothian, the Pentlands, and the Forth were a barrier to a great expansion in space, whilst a falling birthrate and a slowing rate of rural immigration pointed to a static or slowly decreasing population.

Edinburgh was entering a period of stabilisation, where the need to husband resources would ultimately stimulate a second phase of exploration, this time of familiar institutions and the City lands. At such a time the integration of social and material elements forms the basis of future development, and the overall plan becomes a necessity, but always in terms of the wider relationships within region and nation.

In 1943 the Corporation set up an advisory committee, consisting of J. L. Clyde, chairman, Sir Thomas Whitson, and Sir J. Donald Pollock, to report on the general considerations governing the development of the City as the capital of Scotland and its place in local and national administration. Again, in 1943 the Local Authorities in the Central and South-east Region of Scotland agreed to set up a Regional Planning Advisory Committee, with Sir Frank Mears as consultant, to prepare an outline regional plan into which the plans of the respective authorities would be dovetailed. Thus, early in 1946 the Corporation were conscious of the need to crystallise this second phase of exploration, and requested Sir Patrick Abercrombie to prepare a plan for the City to serve as a guide to the Town Planning Committee in their consideration of the various forms of development that would now come under the new Town and Country Planning (Scotland) Act, 1947.

The Plan is therefore advisory and the proposals will be thoroughly considered by the appropriate committees of the Corporation, and either adopted, rejected, or modified in the light of greater experience of conditions within the City. It would thus be unwise to imagine that the proposals form the final development plans for Edinburgh—and, indeed, that is not their purpose. With a background of sound factual survey the object of the Plan is to stimulate discussion and controversy, propagate brilliant ideas, and provide a few lively show-pieces and Aunt Sallies.

The Plan for Edinburgh was exhibited in the M'Ewan Hall, in October 1947, and was shown in two sections, the Civic Survey and the Proposals. The series of surveys form the major part of the Plan, since they indicate not only the problems but the broad lines of the solutions ; the final plans give geographical significance, definition, and direction.

CIVIC SURVEY

Social Conditions

The greater part of the Civic Survey is concerned with the social condition of people living within the City, and represents the facts about the distribution and density of population and housing. Since approximately 160,510 persons, or 36 per cent. of the population, are living in 47,209 dwellings of sub-standard and overcrowded conditions it was seen that the resulting social ill-health would be having a deleterious effect on the health of the population as a whole, and so this condition has been a primary concern in the re-planning of the City.

The people of Edinburgh are still focussed on the old settlements that dotted the region now forming the City area. Industry has in many cases penetrated these settlements and, in prolonging their existence, has in the end hastened their decline ; in other cases, industry has broken new ground and collected a nucleus of population around it. Thus the survey of Population Distribution indicates the large number of people who live in and around Leith : the close huddle of people who cluster the Castle Ridge, extend into St. Leonards on the steep braes facing Salisbury Crags, and flow down into the Grassmarket : and the newer concentrations of Fountainbridge, Dalry, and Gorgie, where canal and rail communications have stimulated industrial growth.

Population density generally follows the character of population distribution, but clearly defines where overcrowding is serious. On the basis of so many people to the residential acre, the Castle Ridge appears to be the most densely populated street in the City ; the Canongate has 422 people to the acre, the High Street 367, the Grassmarket 389, and on the parallel ridge, Princes Street, 302 ; further afield, Dalry has 297 persons to the acre, and Leith 170. In contrast to these figures the Braids and Fairmilehead district and Murrayfield have a density of 12. Here are indications of future planning policy, for the Old Town, in spite of a considerable decanting of population in recent years, is still in need of further decentralisation, and the lower densities of many suburban districts indicate where people might be settled.

The survey of Population Distribution into Family Sizes indicates that small families are general throughout the City ; there are, however, district variations, and the industrial areas tend to have a greater number of families of 5, 6, and 7 persons, with a high proportion of single persons and married couples, childless or with one child. The High Street is the most extreme example of this family structure, but similar figures are found in the Canongate, and the industrial districts of Dalry and Gorgie. In comparison, the residential districts of Braids and Colinton indicate a high proportion of families of 2, 3, 4, and 5 persons, with a very low proportion of single people. The social implication of these figures is difficult to ascertain since the age-group composition and sex distribution is not included and there is no indication of occupation. The information on family structure and distribution has an especial value in giving a clue to the size of house and the proportionate number of each size required in the new housing schemes. The added information of age and sex would define further the type of accommodation required.

The survey of Dwelling Sizes gives the distribution of dwellings grouped under the respective size of accommodation, and has a direct relation to the density of population. The greatest number of 1-2 room dwellings is found on the Castle Ridge, and in certain parts of Leith, and indicates where rebuilding and replanning of existing housing is urgently necessary.

The survey of Dwelling Conditions indicates where building blocks contain sub-standard accommodation, a term which is defined as houses not containing normal present-day sanitary facilities. Over one-third of the houses in the City are unfit by this not very exacting standard, and the

condition of these properties is in reality far worse when considered by a proper standard of light, air, and open space. In the High Street there are 1420 dwellings of which only 138 have normal sanitary facilities ; in the Canongate these figures are 1300 and 107 ; the Grassmarket, 509 and 93 ; Leith, 15,720 and 5106 ; and Dalry, 5299 and 1051. Newington, a long-established residential district, has figures of 1705 and 1237 ; Prestonfield, a housing estate and a bungalow district, 637 and 601 ; and a rural area such as Gilmerton, 566 and 398.

The survey of Dwelling Ownerships shows the proportion of dwellings individually owned, rented, or Corporation owned, and demonstrates that the highest proportion of rented accommodation is found in areas of substandard dwellings of inadequate size and extreme congestion. There is

little incentive for private property owners to provide housing for working-class people, and slum properties are often profitable without the necessity of incurring expense in bringing them up to date. These factors reinforced by the survey make it clear that eventually the Corporation will have to acquire all sub-standard housing areas on behalf of the community, and redevelop the housing, commercial, and industrial potentialities within these localities.

Industry

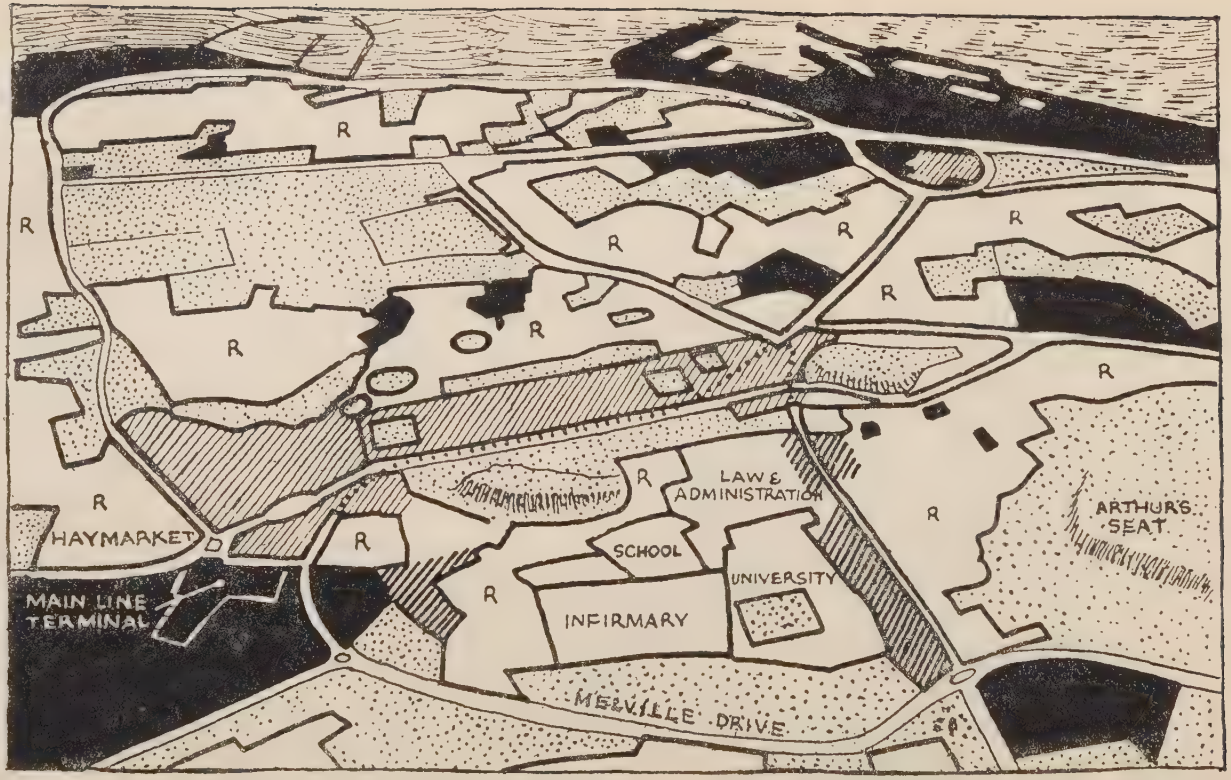
As a matter of policy it is considered that Edinburgh should aim to retain her commercial and cultural character rather than become an industrial city, so it has been assumed that the rate of industrial expansion will not be continued indefinitely ; an increase of 400 acres land space for industry has therefore been allotted for expansion, including allowance for modernisation and re-equipment. An analysis of trends indicates that industry is in a healthy state at the present time, general engineering of all grades, chemical manufacturing, food processing, and paper manufacturing are on the increase, and these included with the many other industries in the City will tend to give stability in the future.

Factors that determine the re-location of industry are mobility and danger to public health, therefore, industries have been classified as non-mobile and partially mobile, and obnoxious or otherwise. Non-mobile industries are those which have buildings or equipment that cannot be readily dismantled, or which are tied to a particular site of work, raw material, or transport needs. Such industries are largely situated in Leith, Dalry, and to some extent in the Canongate. The definition of obnoxious industries is applied to those giving off foul fumes and unpleasant smells, or are noisy and have dirty surroundings. The survey indicates that this type of industry is largely centred in Dalry, where engineering and chemical manufacturing are predominant ; there are also concentrations in Leith, where engineering, fishing, chemicals, and sawmilling are the main activities, and in the Canongate, where brewing and engineering are located.

The industrial survey points to a series of facts that are closely related : Leith and Dalry are the biggest centres of industry, and for the reason of general non-mobility must be accepted as the nucleus of future development, and the state of obnoxiousness must be overcome by a segregation of housing and industry, and the various categories of industry. The inseparable nature of industrial and social factors becomes obvious in the case of Leith, Dalry, and the Canongate, where heavy industrialisation is accompanied by overcrowding and bad housing conditions ; these areas of over-concentration have, in fact, become areas of disease that must seriously affect the social stability of the City.

Open Spaces

Edinburgh has scattered its streets and buildings around a magnificent series of hills and open spaces, that unexpectedly delight and dominate the eye, and provide open space of a rugged nature. Agricultural land is found throughout the suburban districts and even near the heart of the City, and



KEY

INDUSTRY & DOCKS
OPEN SPACE
SHOPS & OFFICES
COMMERCIAL
R RESIDENTIAL
ROAD TUNNEL SYSTEM

PLAN FOR CENTRAL EDINBURGH

MODEL OF PLAN FOR CENTRAL EDINBURGH

THE ROYAL MILE

EDINBURGH TO-DAY

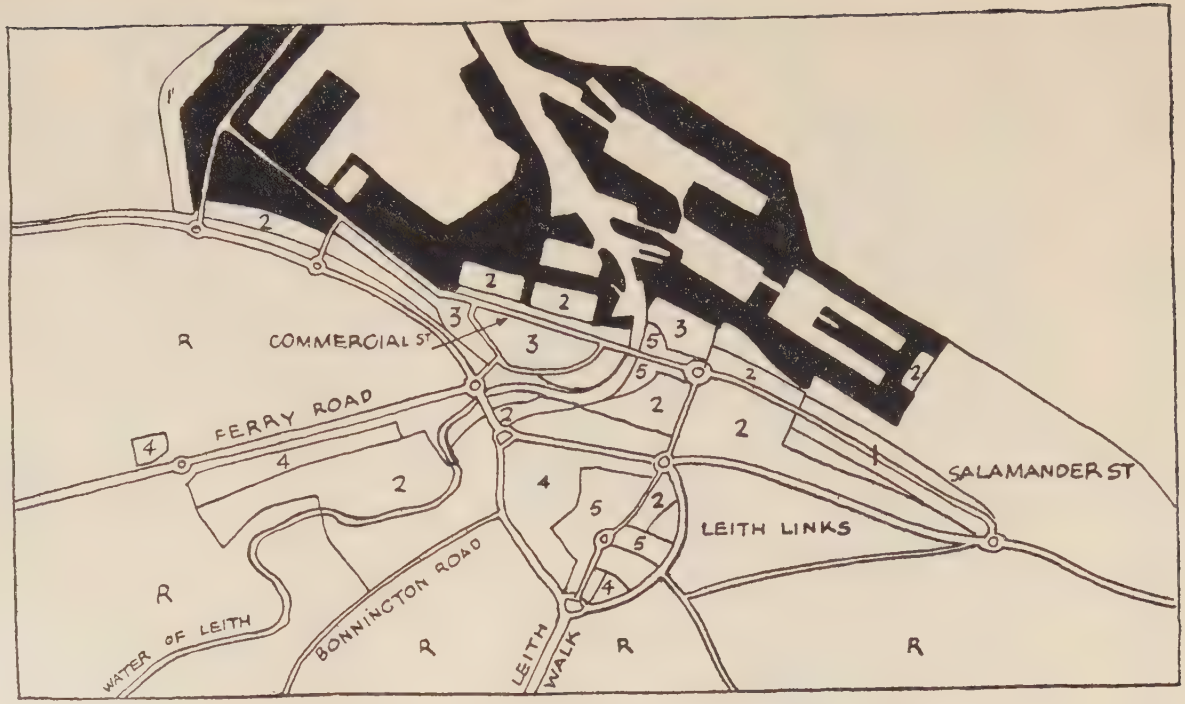
PORTOBELLO: FIRST-CLASS AGRICULTURAL DEVELOPMENT

DALRY: INDUSTRY, RESIDENCES, WORKERS' HOUSING, CEMETERIES, FOOTBALL STADIUMS

EDINBURGH TO-DAY

LEITH AND THE PORT OF EDINBURGH

PLAN FOR CENTRAL LEITH



KEY

	DOCKS	3	WAREHOUSES
1	HEAVY INDUSTRY	4	LIGHT INDUSTRY
2	GENERAL "	5	SHOPS & OFFICES
R	RESIDENTIAL AND COMMUNITY		

PLAN FOR CENTRAL LEITH

amounts to 32 per cent. of the total area within the municipal boundaries, golf courses amount to 6 per cent., and public open spaces to 4 per cent.; these figures included with other categories of open space cover approximately 51 per cent. The City is, however, badly served for recreational facilities, which are quite insufficient in area, and badly distributed, involving in many cases long-distance travelling and overcrowding of available pitches. Such conditions vary between one district and another, but are worse in the more congested areas, where Leith is a bad example of lack of facilities for organised games.

Communications

The surveys of Traffic Density indicate that over-concentration is again evident, the road, rail, bus, and tram systems, partly by geographical accident and partly by the design of sound business acumen, converge on Princes Street and cause acute traffic problems. The character of the shops in this thoroughfare makes it imperative that the clientele is city-wide and even nation-wide, and to ensure this, their position must remain easily accessible at all costs. Princes Street and its feeders carry a greater volume of traffic than any other section of streets, and this concentration is heaviest in the West End, where the main feeders are the Lothian Road and Shandwick Place. At the East End the volume of traffic divides between Leith Walk and the Bridges. From the survey it would appear that little use is made of by-pass routes such as Melville Street–Queen Street–London Road to the north, and Morrison Street–High Street or Cowgate to the south. A further survey has been completed on Road Traffic Origin and Destination which gives a clear indication of the destination of traffic entering the City boundary at selected points. The greater part of traffic destined for Princes Street would appear to come from the west, via the Glasgow Road, and to a lesser degree from the east via the A1 trunk route, while there is a heavy volume of traffic destined for Leith from Queensferry and Fife.

PROPOSALS

Population

The proposals deal primarily with the redistribution of population into evenly balanced communities. The solution entails resettlement of people into the more sparsely populated districts, and thus at the same time corrects the conditions of overcrowding and underpopulation, both of which in extreme forms can lead to the breakdown of community life. In order to guide redistribution, the City has been divided theoretically into seven Community Units each of approximately 60,000 people, contained within the main arterial road system to avoid cutting up by through routes. These Units are further subdivided into Neighbourhood Units of approximately 10,000 people, which are to be preserved against severance by main roads and railways. (Fig. 2.)

Since the Neighbourhood Units generally conform to existing districts, they have been made the basis of all community needs, and within each, space has been allowed for a centre containing shops, branch library, health and community buildings, and small workshops. The Unit is provided with nursery and primary schools and playing fields within its

boundaries, but the secondary schools and playing fields are situated either in the green belt or near to hand in some of the private open spaces ; certain golf courses have been used for this purpose, since it was considered they could be reinstated in the green belt.

It has been assumed that the City will act as a source of business, culture, and administration, which will tend to stabilise the population, and therefore there will be no overspill beyond the municipal boundaries into satellite towns. The redistribution of the population will take place within the Community and Neighbourhood Units, but the proposed density of the population will be more influenced by the proposals for the City Centre.

FIG. 2 COMMUNITY UNITS

For this reason the zones of density are classified as follows : An inner urban zone with a density of 100 persons to the acre, which includes the Grassmarket (density to-day 389), Toll Cross, Princes Street (302), Abbey Hill, St. Leonards (301), and the Canongate (422).

An urban zone of 75 persons to the acre, which includes Marchmont (91), Merchiston (40), Dalry (297), and along the Estuary shoreline, Granton (66), Leith (170), and Craigentinny (43).-

A suburban zone of 50 persons to the acre, which includes Newington (18), Fairmilehead (12), Saughton (41), Murrayfield (12), Corstorphine (24), Davidson's Mains (14), Portobello (83), Craigmillar (121), and also includes Craigleith (32), and the West End (68).

An outer zone of 30 persons to the acre, which includes Colinton (19), Maybury (12), Cramond (10), and Gilmerton (22).

The direction of the redistribution is clearly seen in the contrasted figures and is again echoed in the General Development Plan, where new housing and school areas of large extent are indicated at Liberton, Fairmilehead, Colinton, Sighthill, Maybury, Cramond, Duddingston, Craigmillar, and Gilmerton. (Fig. 3.)

It is proposed that the Canongate should become a residential area, and that existing industry should vacate the area in front of the Palace of Holyroodhouse, which is occupied largely by breweries, whose premises

FIG. 3 GENERAL DEVELOPMENT

would be out of date within the next fifty years, and for whom an alternative site is found at Abbeyhill. Industry has been generally grouped in its present location and is concentrated in two large areas at Leith and Dalry, with well-defined subsidiary areas evenly located elsewhere.

The central area, including the Old Town as far south as the Meadows, the West End, the New Town as far north as Queen Street, has been designated as the Cultural, Commercial, and Administrative Centre.

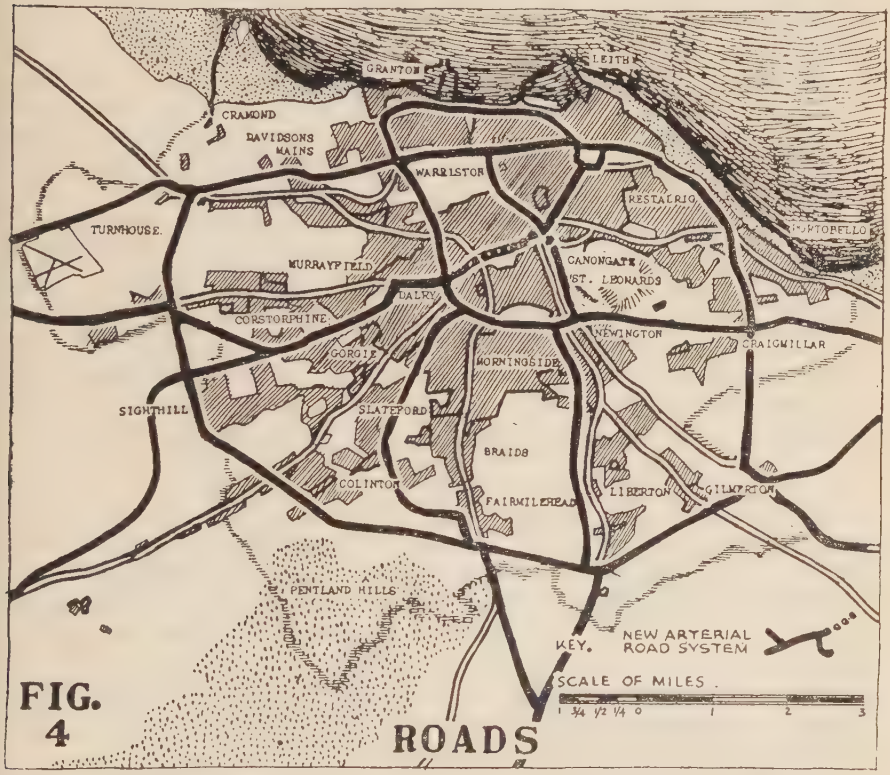
Communications

The position of the Castle Rock between the Pentlands and the Forth Estuary has long since determined to-day's road pattern and will mould future patterns. The rise in importance of Princes Street has shifted the main focus of this system, and thus the main arterial roads radiate from

either end of this important thoroughfare. A solution to the problem of the ensuing congestion has been attempted in two ways, by the decentralisation of the population to properly serviced Neighbourhood Units, and by a new system of sub-arterial roads. (Fig. 4.)

The Outer Ring Road provides a link between all the main arterial routes entering the City, and directs traffic, which is passing through the region, away from the built-up area ; at the same time it provides Leith with good access from the west.

The City Through Road enters the built-up area at Hope Park by a new line to the south of Arthur's Seat and proceeds via the Meadows to



the Main Line Terminal in Morrison Street, by-passing Princes Street, and continues westwards to Saughton, dividing into two branches to Gogar Burn and Maybury.

The Meadows section of this route forms the southern portion of the Inner Ring Road, which after crossing Morrison Street leads to Rutland Square where it enters a tunnel to the Princes Street by-pass below the level of the present highway, but open to the Gardens where direct light and ventilation is possible ; finally it emerges by the Roman Catholic Cathedral at the top of Leith Walk. The Inner Ring Road is completed by a link leading from Hope Park on a new south to north road through St. Leonards to Leith Walk by a tunnel under Calton Hill. There is also a link short-circuiting part of this ring, from the open-air round-about below the level

of the Scottish National Gallery, passing under the North Bridge and connecting with the new south to north section of the ring at a high level above Market Street. The road proposals are completed by the Radial Roads, which provide direct access to the Inner Ring Road from Granton, Leith, and the Esk Valley.

The L.N.E. Railway, with the great density of traffic at the approaches to Waverley Station, is seeking to expand its services in the Midlothian and East Lothian coalfields, but at the present time the station site is too cramped to deal with both long-distance and suburban traffic, and still give adequate access for vehicles and pedestrians, and room for the fruit market. It is therefore proposed that a suburban station only be retained on the Waverley Station site, and that this and the portion of line in Princes Street Gardens be covered in to increase the garden area.

The Caledonian Station is also to be abandoned, and the new proposals include a combination of both stations into a long-distance Main Line Terminal at the junction of Haymarket and Morrison Street, to be on two levels, the upper level will take the L.M.S. traffic and the lower the through L.N.E. traffic.

At the present time the two lines are at these levels, which will avoid the re-alignment of the existing through route from Waverley to Haymarket. The L.N.E. goods and main-line traffic is to be brought into the Terminal by the existing line through New Craighall and thence by a new tunnel and extension of the line under the Meadows to Morrison Street. Redevelopment will be greatly aided by the removal of superfluous branch lines behind Leith and in Dalry, and the abandonment of the branch lines to Corstorphine and Barnton, and the Morningside suburban line.

Industry

The purpose of the proposals for industry is to eliminate the present mix-up of factories of all types, and housing. Existing residential property will be pulled down and alternative modern accommodation be made available for displaced families in the adjacent residential communities ; the space thus cleared will be allotted for industrial expansion and reorganisation.

Industry has been divided up into categories based on the type of industry, and the industrial zones are made up of one or more of these categories depending on the size of zone and locality.

General Industries are the heavier types of factory and warehouse, and those which require easy access to railways and docks.

Special Industries are those that are noxious and liable to cause nuisance when in proximity to residential areas.

Light Industries are the lighter type of factories, warehouses, and commercial establishments.

Service Industries may be public transport garages, milk and food distribution depots, and the smaller workshops and stores ancillary to the purely commercial areas.

The industrial zones are based upon estimated present-day site requirements for industry and upon estimated future needs.

The most extensive zone is that of Dalry, including Fountainbridge and Gorgie, which will include an outer strip of open space, a perimeter of light

industries, a core of general and special industries, and a commercial centre with green open space. Special industries are located at Craigmillar, Granton, and Meadowbank, and light industry is to be found in the remaining industrial zones, with service industry at Annandale Street. (Fig. 5.)

There is yet another " industrial " zone covering some 10,000 acres for which no proposals have been made. This is situated for the greater part on land classified as A+ and A by the Department of Agriculture, and contains some 30 market gardens and 100 farms, ranging from hill sheep-farming to dairying and wheat growing ; of this number some 40 are arable. A study of the proposals, however, indicates that a large area of this highly

FIG. 5 RAILWAYS & INDUSTRY

developed and thriving zone will be destroyed for the new housing developments.

Leith

The Port has been the subject of a special study, since it is considered that this area calls for the highest priority of any reconstruction. During recent years pressure of industrial development has forced the population away from the central core of Leith, and this movement has left a decaying jumble of tenements and crowded factory buildings in inadequate lanes and yards.

Thus the proposals provide for the elimination of all dwellings from the industrial centre and a re-development of the land set free for industry.

Between Edinburgh and Leith a semi-circular open space from Ferry

Road to Restalrig is proposed, to take parks, playing fields, and grouped housing layouts for two- and seven-storey flats with community buildings. At the foot of Leith Walk an area of light and service industries is provided with a shopping and commercial centre surrounded by a ring sub-arterial road leading traffic from Ferry Road to the eastern section of the Outer Ring Road ; a further area of similar industries extends between Ferry Road and Bonnington Road. From this centre, Constitution Street leads to a smaller nucleus of offices and shops in the docks, with certain community buildings on the banks of the Water of Leith. Industry within the docks is limited to the heavier type of factory and warehouse, which have been grouped centrally to the wharf layout, and on the main lines of road and rail communications.

The Plan for Leith shows an admirable working relationship between housing and industry, in terms of access, screening from prevalent winds, and allowing space for rapid transit. The proposals, too, are positive in retaining the Port as an entity, with every opportunity to function more happily and efficiently in its own right ; a position that is well emphasised by the proposed green belt that separates Leith from the City.

Conclusion

The surveys indicate a heavy concentration of people and bad social conditions within the City Centre, and thus in the proposals the reasonable principle of decentralisation has been adopted. The surveys also indicate a similar concentration of shops, offices, and public buildings, but it is the policy of the City Plan to assume that Edinburgh will be the Cultural, Commercial, and Administrative Capital, and the proposals allow for an even greater concentration in the Centre for this purpose.

This wholehearted development of central Edinburgh in order to create the edifice of the Capital City for the region or nation, would require the undivided support of the remaining districts. To this end the Community and Neighbourhood Units are organised and serviced to a certain social standard, which nevertheless leaves them dependent on the Centre for their existence, and this position is given greater emphasis by the sub-arterial road system that leads all incoming traffic directly to the Centre, and leaves the Units in a quiet backwater, where they can perform their evident function as dormitories.

But there was no evidence in the Plan, as exhibited, that the immediate region of the Forth Basin, or even Scotland, would support Edinburgh as a cultural and commercial capital ; indeed the vast expansion expected in the coalfields throughout the Forth Basin will give every encouragement to the already growing engineering, chemical, and food industries in the City, whose character and size might thus be very considerably changed.

Any statement of policy as to the future status and position of the Capital should be based on a factual survey of trends and its sphere of influence, or else the City Plan might well be invalid. In fact such a statement of policy is perhaps The Plan, and the City Plan merely a civic spring-clean.

Acknowledgments.—The author's thanks are due to Mr. A. M. Graham, of the Town Planning Department, for kindly verifying the factual matter in the text ; to the Scotsman Publications Ltd., for permission to reproduce the photographs of the model of the City and the Plan for Leith ; and to the Air Ministry, through the Department of Health, for permission to reproduce the aerial photographs.

THE TRANSITORY CHARACTER OF VEGETATION MAPS

By E. Wyllie Fenton, M.A., D.Sc.

The importance of maps needs no stressing as far as geographers are concerned. Maps such as the Ordnance Survey Maps may be used for many purposes. But when special maps are published, such as those dealing with vegetation,[1, 2, 3, 4] the use of these maps for planning may lead to wrong conclusions. This is due to the fact that the dominant surface vegetation is recorded and, not infrequently, it may show marked changes. It is apparent therefore that vegetation maps require more careful scrutiny. Different types of vegetation may cover similar soils. For example, many parts which twenty-five or fifty years ago were recorded as dominated by trees or heather (*Calluna vulgaris*) would to-day be recorded as grass or a mixed grass—heath type of vegetation. Another change which has occurred within recent times is the replacing of non-coniferous or mixed woods with conifers. This change may not, at first, appear to be of much significance. It does become important if conifers continue to occupy the ground for a long period of time, particularly in the case of Spruce. The reason for this is that the steady fall of needles, among other factors, leads to the podsolisation of the soil. A soil so developed is not only infertile but usually intractable, if it is desired to utilise it for agriculture. Hence, the marking on the map of a woodland may not be sufficient even if, as usual, the wood is indicated as non-coniferous or coniferous.

In some regions marked changes of vegetation may be noted within a restricted area although, fundamentally, the soil type is very similar. For example, on some of the lighter sands and gravels of the lower levels of the Valley of the Dee (Aberdeenshire), there may occur, (*a*) mixed farming, (*b*) a broom (*Cytisus scoparius*) dominated area, (*c*) a heather (*Calluna vulgaris*) dominated area, (*d*) scrub grass, partly grass with broom and (or) whin (*Ulex europaeus*), dog rose and other shrubs, (*e*) scattered non-coniferous trees (often birch) with a grassy surface vegetation due to grazing animals ; and next to this (*f*) a Scots pine, juniper and heather association with occasional birch trees. In a vegetation map all these will probably be duly marked. For the purpose of land utilisation, what conclusions might be drawn from such a vegetation map ? It would indeed be surprising if wrong deductions were not reached.

Perhaps a brief outline of a few of the factors at work which produce these surface differences of vegetation might not be out of place. If we commence with the Scots pine-juniper-heather type as the natural climax, it will simplify matters. Grazing can reduce this to a grassy type instead of heather and, in time, juniper and many of the pines may die out. At this stage it can be broken up for farming. If in its wild state it is interfered with by clearing the trees, and the grazing is not severe, a heath may develop. If the heather opens up, other plants may intrude—broom, whin, possibly bracken and dog rose. Grazing may be just sufficient to keep the area a shrub-grassland. If this is neglected, or a high flood tears off or destroys much of the surface vegetation and removes the thin surface soil, then broom may quickly colonise most of the ground so affected. On the other hand, if broom and whin are not in the vicinity to gain access, then

mosses will commence colonisation followed by heather. Scots pine may follow as does happen at times in small isolated islands or small parts where there are no rabbits and no grazing. Where there is a thin covering of peat at, or near, the surface of the soil, heather is most likely to be the dominant plant in the absence of grazing. Lest it be considered that the vegetation typical of such a part under natural conditions (Scots pine-juniper-heather) would be useless for any purpose but afforestation, it is of interest that within such an area to-day there still exist, at ground level, the outlines or ruins of buildings. So about two centuries ago, or less, the area was ' farmed ' and has since reverted to nature.

Over forty years ago, R. Smith [1] pointed out that oak and pine compete for dominance in certain parts. There is good evidence that the oak was more common and widespread in the past and indications of that can still be found to-day.[5] A further point of importance is that it appears that the sessile oak and certain conifers are equally capable of growing on certain soils and situations. The ground vegetation of an oak wood is normally quite different to that of an open pine or coniferous wood where a ground flora is present. The result is that generally the soil of an oak wood is, relatively, more fertile. Even so, pines may intrude into an oak wood, but it is comparatively rare to find oaks coming into a pine wood. This doubtless is due to the many factors retarding the natural regeneration of the oak,[6] and that the oak is seldom grown to-day. But, oaks and pines will grow together.

How can these apparent contradictions be reconciled with vegetation maps when it is evident that certain types of vegetation may and can be interchangeable ? It becomes evident that what is desirable is some method of settling the degree of interchangeability of certain types of vegetation so as to show something of the relationship. Until sufficient information on such problems is available, the difficulty of using a vegetation map with some degree of safety remains. There are other and more subtle points, however, for all heather-covered areas are not the same, as foresters have discovered by experience. Even all woods are not the same though composed of the same tree or trees.

Is there any solution to these difficulties at the present time ? Yes, and the answer lies in sufficient notes dealing with, or outlining the ecology of, the various types of vegetation recorded on the map. This would also help to remind users of such maps that nature is never static. There are always changes occurring, sometimes slowly, and at other times with amazing speed. With ecological notes and information available, there is no reason why these inherent dangers and difficulties should not be successfully overcome.

[1] Smith, R. " Botanical Survey of Scotland." I. Edinburgh and District. *S.G.M.*, 1900, 16 : 385-415. II. North Perth District. *Ibid.* : 441-467.

[2] Smith, W. G. III and IV. Forfar and Fife. *S.G.M.*, 1904, 20 : 617-628. 1905, 21 : 4-23, 57-83, 117-126.

[3] Hardy, M. " Botanical Survey of Scotland." *S.G.M.*, 1906, 22 : 229-241.

[4] Geddes, A. " Lewis." *S.G.M.*, 1936, 52 : 217-231, 300-313.

[5] Fenton, E. Wyllie. " Indications of Former Woodland as an Aid for Afforestation." *Scottish Forestry*, 1947, 1 : 23.

[6] Fenton, E. Wyllie. " Some Factors affecting the Natural Regeneration of Oak in Certain Parts of South East Scotland." *Transactions of the Botanical Society of Edinburgh*, 1944-1945, 35 : 213-232.

GEOGRAPHY AT THE BRITISH ASSOCIATION

A SENSE of continuity to the British Association meetings was provided by the holding of meeting for 1947 in Dundee, where the previous session had been interrupted by the outbreak of war in 1939. Many attended this year, and the meeting was particularly valuable on account of the reforming of contacts after eight years.

Section E (Geography), under the presidentship of Emeritus Professor E. G. R. Taylor, was able to welcome Professor Sölch of Vienna and Professor Jacoba Hol of Utrecht. The programme for Section E was directed towards the contribution geography can pay in both peace and war, with the emphasis on peace.

Mr. A. Davies contributed a paper on " Changing Values in Military Geography," which was the principal study presented on the war aspects. With planning so much to the forefront after a period of destruction, several geographers gave papers which showed how their approach had much to contribute to the rational utilisation of national resources.

Mr. A. E. Smailes, Dr. R. E. Dickinson (whose paper was read for him by Mr. J. N. L. Baker owing to his visit to the United States), and Mr. J. P. Haughton provided papers on urban geography—the first two on standards of urban development, and the last on Dublin. Mr. J. M. Houston read a paper on " Village Planning in Scotland, 1745-1845."

Mr. J. G. Kyd spoke on the " Third Statistical Account of Scotland," and this became coupled, in the long discussion which ensued, with a paper by Dr. C. P. Snodgrass, " A Geographer's Approach to Scotland's Problems." Local studies were confined to those on Scotland : Mr. S. J. Jones on " Dundee," Dr. J. F. Scott on " Morvern," and Miss P. M. Hobson on " Lewis." Papers dealing with population and related problems were read by Dr. H. C. K. Henderson, Mr. T. W. Freeman, Mr. R. W. Steel, and Dr. A. Geddes.

A feature of the session was the long discussions, with an afternoon devoted to consideration of the Presidential Address [see p. 97].

Outside the lecture hall, geographical thought was followed in the excursions to Angus, and Perthshire, and to Fife, as well as at the Section Dinner. The meetings of the other sections also contained much material of interest to geographers : Section C, on the coal supplies of Britain ; Section A, on coal as a source of heat and power ; Section B, on chemical resources and industry in Scotland ; Section G, on hydraulic models with special reference to the model of the Tay estuary—to which Section E paid a visit ; Section H, on dating the past ; and Section I, on aviation physiology.

A. C. O'DELL.

NOTES AND REFERENCES

EUROPE

FOOD AND AGRICULTURE, the FAO European Bulletin, a bimonthly publication of the Food and Agriculture Organisation of the United Nations, is issued by its Temporary Bureau, Villa Borghese, Rome. The first number (August-September 1947. 10½×8. Pp. 84. $0.50) has a Foreword by S. L. Louwes, Special Adviser to the Director-General, Sir John Boyd Orr, who outlines the work of the European National FAO Committees and the taking over of the work of the International Institute of Agriculture. The Bulletin includes articles on agriculture and nutrition in Europe by experts, news items, and a bibliography issued by the Library of the Temporary Bureau. FAO National Committees in Europe are listed.

PROBLEMS OF SOIL AND LAND CLASSIFICATION. *Nature*, 1947, 160 (*4072*) : 686-687.

Brief report on the first conference of the British Society of Soil Science, held in Oxford during September 26-29, 1947.

NATURE PROTECTION IN GREAT BRITAIN. By G. F. H. Smith. *Nature*, 1947, 160 (*4066*) : 457-459.

WARTIME CHANGES IN BRITISH AGRICULTURE. By L. Dudley Stamp. *Geographical Journal*, 1947, 109 (*1-3*) : 39-54. 4 figs. 4 photographs. Discussion : pp. 54-57.

PROPOSED THIRD STATISTICAL ACCOUNT OF SCOTLAND. Foreword by Sir Hector Hetherington, LLD. 10×8. Pp. 14. Edinburgh : Scottish Council of Social Service, 1946. 6*d*.

THE INSTITUTE OF SEAWEED RESEARCH. By H. R. Fletcher. *Nature*, 160 (*4072*) : 662-664.

The author outlines the activities of the Scottish Seaweed Research Association, formed in 1944, and the programme of the Institute of Seaweed Research, Musselburgh, opened in September 1947, which includes a survey of Scottish seaweed resources, harvesting and processing investigations, and the development of new and extended uses of seaweed and seaweed products. Under the direction of Dr. F. N. Woodward and of the acting director, Major P. Jackson, the work of the Institute is apportioned to its botanical, chemical, and engineering divisions.

FROM ST. ABBS TO FAST CASTLE. By A. Geddes. *Scotland's Magazine*, 1947, 40 (*2*) : 46-47, 49. 3 illustrations.

A geographical appreciation of the beauty of the Berwickshire cliff coast.

THE PEMBROKESHIRE NATIONAL PARK. By J. Huxley and R. M. Lockley. *Geographical Magazine*, 1947, 20 (*6*) : 220-229. 10 photographs. Sketch map.

A description of the coastal national park, illustrated with kodachromes.

LAND UTILISATION IN THE BELFAST AREA. By D. A. Hill. *Geography*, 1947, 32 (*1*) : 20-33. 8 figs.

THE IRISH PILCHARD FISHERY. By A. E. J. Went. *Proceedings of the Royal Irish Academy*, 51 B (*5*) : 81-120.

THE FRENCH CENSUS OF MARCH 10, 1946. *Annales de Géographie*, 1946, 55 (*300*) : 317.

The total population of the 90 departments was 40,517,923 (not including 312,105 on service furth of France), 1,389,133 less than at the census of 1936. The number of foreigners declined by 728,778 during the ten-year period to 1,670,729. The number of towns of more than 100,000 inhabitants increased from 17 to 23, additions being Rennes, Limoges, Nîmes, Grenoble, Dijon, and Le Mans. The total number of deaths directly due to the war (military, civilian, prisoners and deportees) is estimated to approximate 600,000. In 1945, the birth rate was 16·4, death rate 16·8, and marriage rate 19·7, as compared with 16·3, 20·4, and 10·7, respectively, per 1000 inhabitants in 1944.

LE CANAL MARITIME DES DEUX-MERS. *À travers le Monde*, 1946, 1 (*7-8*) : 20-30.

The history of the construction of the Canal du Midi is summarised, and the project of a ship canal linking Bordeaux and the Mediterranean is discussed. The advantages of a canal for vessels up to 40,000 tons are stressed. It is estimated, for example, that a saving of two days would be affected in the case of larger vessels, and of four days by cargo vessels, on the route between the Channel and the East.

GEOGRAPHICAL INSTRUCTION IN SPAIN BY THE JESUITS. By P. A. Bleye. *Estudios Geográficos*, 1946, 7 (*24*) : 355-410. 61 references.

THE VALLEY OF THE RIO LUNA. By E. T. Laso. *Estudios Geográficos*, 1946, 7 (*24*) : 419-477. 11 figs. 4 plates.

A regional study of the north-eastern part of the province of León.

THE GEOGRAPHICAL POSITION OF THE AZORES. By A. Botelho de Sousa. *Boletim da Sociedade de Geografia de Lisboa*, 1946, 64 (*3-4*) : 69-79.

An historical review of the strategic importance of the Azores.

GEOGRAPHICAL POSSIBILITIES OF TOURISM IN THE AZORES ARCHIPELAGO. By A. Narciso. *Boletim da Sociedade de Geografia de Lisboa*, 1946, 64 (*3-4*) : 87-124. 13 photographs.

THE MARINE FORELAND : GEOGRAPHICAL STUDIES IN THE DEVELOPMENT OF YOUNG COASTAL PLAINS OF DENMARK, WITH AN OUTLINE OF THEIR ANTHROPOGEOGRAPHY, WITH SPECIAL REFERENCE TO ZEALAND (SJAELLAND). By A. Schou. *Folia Geographica Danica*, 1945, 4 : 1-236. 86 figs. Plate (18 coloured maps). English summary : pp. 213-224. Bibliography : pp. 225-233.

SWEDISH GEOGRAPHICAL BIBLIOGRAPHY FOR THE YEAR 1945. *Svensk Geografisk Årsbok*, 1946, 22 : 201-219.

The bibliography includes a list of maps issued in Sweden during the year.

INDALSÄLVEN, THE MOST UTILISED WATER-POWER OF SWEDEN. By H. Nelson. *Svensk Geografisk Årsbok*, 1946, 22 : 141-170. 14 figs. 25 references. English summary : 170-171.

The Indalsälven and its eight power stations are described and illustrated. The output of the fourteen major hydro-electric plants in Sweden is tabulated. Owing to regulation of the river, erosion and glacial and post-glacial deposits in the river basin could be studied, and are also discussed.

THE MATCH INDUSTRY IN SWEDEN : AN HISTORICAL AND GEOGRAPHICAL STUDY. By G. Andreasson. *Ymer*, 1946, 66 (*4*) : 241-272. 8 diagrams. 5 maps.

ERDKUNDE is the title of Archives for Scientific Geography, edited by Professor Carl Troll, of the University of Bonn, and is now the only German post-war periodical dealing with the subject. The first issue (11×8¼. Pp. 120. Illustrated. Bonn : F. Dümmlers Verlag, May 1947, Vol. 1, Nos. 1-3) contains an editorial introduction, notes, articles, and reviews.

GEOGRAPHICAL SCIENCE IN GERMANY, 1933-1945. By C. Troll. *Erdkunde*, 1947, 1 (*1-3*) : 3-48.

A useful review of German geographical literature during the period, with a bibliography containing 310 references.

NEW RURAL SETTLEMENTS : A GEOGRAPHICAL PROBLEM. By W. Hartke. *Erdkunde*, 1947, 1 (*1-3*) : 90-106. 4 figs.

A discussion of the pattern and dynamics of rural re-settlement in Germany since 1919, with diagrams showing the proportion of new settlers from eastern and western Germany (1923-38), the distribution of new agricultural holdings (1933-38), number in relation to size of holdings (1919-1938), and fluctuations in valuation of holdings in relation to size (1929-38).

AGROCLIMATOLOGY AND CROP ECOLOGY OF THE UKRAINE AND CLIMATIC ANALOGUES IN NORTH AMERICA. By M. Y. Nuttonson. *Geographical Review*, 1947, 37 (*2*) : 216-232. Map.

INTERNAL MIGRATION IN ESTONIA IN CONNECTION WITH COMPLEMENTARY AREAS OF ESTONIAN TOWNS. By E. Kant. *Svensk Geografisk Årsbok*, 1946, 22 : 83-116. 14 figs. 48 references. English summary : 116-124.

CLIMATIC FLUCTUATIONS AND VEGETATION GROWTH IN NORTHERN FINLAND DURING 1890-1939. By I. Hustich. *Nature*, 1947, 160 (*4066*) : 478-479. 3 figs.

A period of diminished growth during 1901-1916 and of increasing growth during the 1920's is correlated with variations in temperature. In an addendum, E. W. Jones supports the view that fluctuations in plant growth in Northern Scandinavia are examples of a general phenomenon occurring in the North Temperate zone.

A. P. ILYINSKII. By A. M. Lavrenko and L. E. Rodin. *Izvestiya Vsesoyuznogo Geographicheskogo Obshchestva*, 1946, 78 (*5-6*) : 602-611. Portrait.

Obituary of Aleksei Porphirevich Ilyinskii (1886-1946), one of Russia's leading plant geographers, with a list of his 173 published contributions to botanical and geobotanical science. He was responsible for a considerable number of vegetation maps, including those published in the first volume of *The Great Soviet World Atlas*.

ASIA

GEOGRAPHY IN THE TRANSCAUCASIAN REPUBLICS. By E. M. Murzaev. *Izvestiya Vsesoyuznogo Geographicheskogo Obshchestva*, 1946, 78 (*4*) : 441-443.

A brief report on recent geographical activities in Georgia, Armenia, and Azerbaijan, with special reference to work on economic geography and geomorphology.

A TENTATIVE CLASSIFICATION OF THE MAIN STRUCTURAL UNITS OF THE ANATOLIAN OROGENIC BELT. By S. W. Tromp. *Journal of Geology*, 1947, 55 (*4*) : 362-377. 1 fig.

THE KHABUR VALLEY. By J. Rowlands. *Journal of the Royal Central Asian Society*, 1947, 34 (*2*) : 144-149. Sketch map.

A description of the inhabitants and activities in the valley of the river which flows from Turkey to the Euphrates south of Deir ez Zor.

THE MARINE ABRASION TERRACES OF THE LEBANESE COAST. By É. de Vaumus. *Bulletin de la Société Royale de Géographie d'Égypte*, 1947, 22 (*1-2*) : 21-85. 3 figs. 11 plates. 3 maps. 19 references.

SOME GEOGRAPHICAL FACTORS IN THE PALESTINE PROBLEM. By E. C. Willatts. *Geographical Journal*, 1946 (1947), 108 (*4-6*) : 146-173. 13 figs. 7 photographs. Discussion : pp. 173-179.

OBSERVATIONS ON THE LANDSCAPE OF SOUTHERN HEJAZ. By C. Rathjens and H. von Wissmann. *Erdkunde*, 1947, 1 (*1-3*) : 61-89. 11 figs. 2 sketch maps. 31 photographs.

The first part of a paper, which deals with the Jidda coastal plain, the Mecca hill country, Wadi Fatima, vegetation, and the town of Jidda and its water supply.

A NEW JOURNEY IN SOUTHERN ARABIA. By W. Thesiger. *Geographical Journal*, 1946 (1947), 108 (*4-6*) : 129-145. 11 photographs. Map (1 : 1,250,000).

Account of a journey through the southern Rub el Khali, undertaken for the Middle East Anti-Locust Mission in 1945-1946.

THE LAND OF THE MAHRA. By T. Altounyan. *Journal of the Royal Central Asian Society*, 1947, 34 (*3-4*) : 231-241. Map.

Account of a journey undertaken in 1946 to the country bordering on the Arabian Sea, between the Sultanate of Dhufar to the east and the Protectorate of Hadhramaut to the west. Mahra is populated by about twenty-five tribes, the total population approximating 40,000. A map shows the author's route by motor and by camel.

OUTLINE OF THE HISTORY OF KUWAIT. By L. Lockhart. *Journal of the Royal Central Asian Society*, 1947, 34 (*3-4*) : 262-274. Sketch map.

THE VALUE OF GEOLOGICAL SURVEY WORK IN INDIA'S ECONOMIC DEVELOPMENT. By Sir Lewis L. Fermor. *Journal of the Royal Society of Arts*, 1947, 95 (*4747*) : 561-571. Discussion : 576-578.

ROADS AND ROAD TRANSPORT IN INDIA. By Sir K. Mitchell. *Journal of the Royal Society of Arts*, 1947, 95 (*4748*) : 592-604. 4 figs. Discussion : 604-610.

THE LAND OF CEYLON. By S. McCune. *Journal of Geography*, 1947, 46 (*3*) : 83-91. 2 sketch maps. 1 photograph.

A note on landforms, climate, forests, and soils.

NOTES ON ROCK WEATHERING IN CEYLON. *Bulletin of the Ceylon Geographical Society*, 1947, 2 (*1*) : 19-21. 1 fig.

THE SOILS OF CEYLON. By A. W. R. Joachim. *Bulletin of the Ceylon Geographical Society*, 1947, 2 (*1*) : 12-18. Provisional soil map.

MAN'S ACTIVITIES IN CEYLON. By S. McCune. *Journal of Geography*, 1947, 46 (*4*) : 147-159. 4 figs.

SOME OBSERVATIONS ON SHIFTING CULTIVATION IN CEYLON. By P. P. Udagama. *Bulletin of the Ceylon Geographical Society*, 1947, 2 (*2*) : 31-35. 1 fig.

NOTES ON THE PATANAS OF CEYLON. By P. A. de Rosayro. *Bulletin of the Ceylon Geographical Society*, 1947, 2 (*2*) : 36-44. 3 figs.

An account of the distribution and character and utilisation of the grasslands (patanas) situated mainly at altitudes above 2000 feet and of their relation to climatic conditions.

THE CITRONELLA OIL INDUSTRY OF CEYLON. By P. G. Cooray. *Bulletin of the Ceylon Geographical Society*, 1947, 2 (*1*) : 1-11. 4 figs.

A NOTE ON GRAPHITE IN CEYLON. By A. Abeykoon and P. G. Cooray. *Bulletin of the Ceylon Geographical Society*, 1947, 2 (*1*) : 22-25. 3 figs. Tables : Exports and imports ; number of mines working, 1914-1946.

A GEOGRAPHICAL INTERPRETATION OF CEYLON HISTORY. By S. F. DE SILVA. *Bulletin of the Ceylon Geographical Society*, 1947, 2 (*2*) : 56-59.

FARMERS AND FARMING IN LADAKH (TIBETAN KASHMIR). By WALTER ASBOE. *Journal of the Royal Central Asian Society*, 1947, 34 (*2*) : 186-192.

NORTH KARAKORAM : A JOURNEY IN THE MUZTAGH-SHAKSGAM AREA. By R. C. F. SCHOMBERG. *Geographical Journal*, 1947, 109 (*1-3*) : 94-98. Map.

A brief account of a journey undertaken in 1945, from Gilgit to Baltit and to the Muztagh-Shaksgam River, thence over the Muztagh pass to the Baltoro glacier in Balistan, and back to Gilgit via the Biafo and Hispar glaciers.

THE AWAKENING OF SOVIET CENTRAL ASIA. By R. A. DAVIES. *Canadian Geographical Journal*, 1946, 33 (*6*) : 256-263. 11 photographs.

Impressions of developments in the five Soviet Central Asian republics, with special reference to agricultural, industrial, and educational progress in Kazakhstan. "One of the world's most illiterate areas twenty years ago, Kazakhstan now has 7,735 schools. . . . The Kazakh Academy of Sciences employs 1,200 scientists and research workers."

DELIMITATION OF THE GEOGRAPHIC REGIONS OF CHINA. By SHU-TAN LEE. *Annals of the Association of American Geographers*, 1947, 37 (*3*) : 155-168. 11 figs.

Regions in China as defined by different geographers are shown on sketch maps. Adopting the method suggested by Otto Maull, the author has derived composite boundary girdles by superimposing the boundaries of topographical, climate, soil, vegetation, land use, and agricultural regions on one map. This enables him to divide China into twelve well-defined major geographical regions, the characteristics of each being briefly described.

THE CLIMATIC PROVINCES OF CHINA. By A. LU. *Journal of the Geographical Society of China*, 1945-46 (22-23) : 15-24.

A NEW MAP OF THE CLIMATES OF CHINA. By J. R. BORCHERT. *Annals of the Association of American Geographers*, 1947, 37 (*3*) : 169-176. 3 figs.

The article is illustrated with maps showing the location of meteorological stations in China, climatic types (modified Köppen classification), and convergence of air masses.

CHINA TEA AND TRADE ROUTES. By P. E. WITHAM. *Journal of the Royal Central Asian Society*, 1947, 34 (*2*) : 150-157. Discussion : 157-162.

A NEW COTTON BELT IN CHINA. By HU HUAN-YONG. *Economic Geography*, 1947, 23 (*1*) : 60-66.

Discussion of the geographical and economic aspects of land use, particularly of the recent cultivation of cotton, in eastern Kiangsu north of the Yangtze Kiang.

THE HOUSES OF THE CHINESE. By J. E. SPENCER. *Geographical Review*, 1947, 37 (*2*) : 254-273. 22 figs.

An illustrated account of domestic architecture, and a discussion of the distribution of regional patterns in China.

SOUTH-EASTERN LITTORAL OF KOREA. By S. MCCUNE. *Economic Geography*, 1947, 23 (*1*) : 41-51. 6 figs.

Relief, climate, settlement, and human activities in the narrow region on the eastern flank of the Taepaek range are described, with reference to Japan's war economy and to the Russian and American zones of occupation (arbitrarily divided by the 38° parallel).

JAPAN : MAIN POPULATION CONCENTRATIONS. By L. A. HOFFMAN. *Journal of Geography*, 1947, 46 (*2*) : 62-69. 1 fig.

RECONNAISSANCE SOIL SURVEY WORK IN JAPAN. By C. L. W. SWANSON. *Science*, 1947, 106 (*2751*) : 256-258. 2 figs.

The article is illustrated with a small generalised soil map and a sketch map showing northern limits of a number of crops in Japan.

THE GEYSERS OF KAMCHATKA. By T. I. USTINOVA. *Izvestiya Vsesoyuznogo Geographicheskogo Obshchestva*, 1946, 78 (*4*) : 393-402.

AFRICA

THE FUTURE OF FRENCH AFRICA. By L. TAVEAU. *À travers le Monde*, 1947, 2 (*2*) : 47-79. Sketch map.

A summary of potential economic resources.

ECONOMIC SITUATION AND SCIENTIFIC RESEARCH IN ALGERIA. *À travers le Monde*, 1947, 2 (*4*) : 171-179.

Abstract from *Documents Algériens* published by the Gouvernement Général, dealing with the industrialisation of Algeria, with lighthouses, and with the activities of the Institut des Recherches sahariennes and of the marine station at Algiers.

EXTENSION OF IRRIGATION IN ALGERIA DURING THE WAR YEARS. By F. Roessinger. *Bulletin de la Société Neuchâteloise de Géographie*, 1947, 53 (*1*) : 1-12. 4 plates. 4 graphs. 8 tables (irrigation and crop statistics).

GEOGRAPHY OF THE SAHARA. By M. Larnaude. *Annales de Géographie*, 1946, 55 (*300*) : 294-299.

Review of published results of work undertaken at the Institut de Recherches sahariennes (since its establishment in 1937 at the University of Alger), where research on the geology, morphology, climatology, and human geography of the Sahara is being co-ordinated.

SAHARA AND THE MEDITERRANEAN-NIGER RAILWAY. By L. Taveau. *A travers le Monde*, 1946, 1 (*4-6*) : 5-22. Sketch map.

A general description of geography, ethnography, and European penetration of the Sahara, and an account of motor and air transport, and of the projected railway, extending to 3,500 kilometres when completed, from Oudja on the Oran-Casablanca line to Gao on the Niger, with extensions to Timbuktu and Niamey.

HARNESSING THE VICTORIA NILE. *African World*, August 1947, 19-20. 4 photographs.

A brief account of hydro-electric development schemes in Uganda, with special reference to the projected power station at Owen Falls which is to come into operation in 1952.

THE PORTAL PEAKS OF RUWENZORI. By P. H. Hicks. *Geographical Journal*, 1946 (1947), 108 (*4-6*) : 210-220. 4 photographs. Map.

An account of two climbing expeditions undertaken in 1945. Results of the survey are compared with the heights determined by the Duke of Abruzzi in 1906. [Cf. *S.G.M.*, 1906, 22 (*4*) : 214-215; (*7*) : 380; (*10*) : 548-549. 1907, 23 (*2*) : 95-96. 1909, 25 (*3*) : 137-144.]

EAST AFRICAN GROUND-NUTS SCHEME. By F. Samuel. *United Empire*, 1947, 38 (*3*) : 133-137. Discussion : 137-140.

The geographical, sociological, economic, and technical implications of the Government plan for the mechanised production of ground nuts in East and Central Africa are of far-reaching importance. Mr. Samuel gives a general impression of the contents of the White Paper and emphasises the need for careful study to ensure the development of the wealth of the African Continent for the benefit of the African people as well as for the world at large. To bring under cultivation an area approximating 5000 square miles will involve the establishment of new village communities and the provision of medical and educational facilities.

CLEMENT GILLMAN. By R. U. Light. *Geographical Review*, 1947, 37 (*1*) : 160-161.

A tribute to the geographical work of Gillman in Tanganyika from 1905 until his death on October 5, 1946.

THE DISTRIBUTION OF NATIVE POPULATION OVER SOUTH-EAST CENTRAL AFRICA. By S. J. K. Baker and R. T. White. *Geographical Journal*, 1947, 108 (*4-6*) : 198-210. 3 figs.

LIBERIA : PAST, PRESENT AND FUTURE. By H.E. Baron de Lynden. *United Empire*, 1947, 38 (*4*) : 188-191. Discussion : 191-192.

THE GOLD COAST—AN HISTORICAL APPROACH. By G. B. Cartland. *United Empire*, 1947, 38 (*3*) : 109-114.

SOUTH-WEST AFRICA. By The Rt. Hon. Lord Hailey. *United Empire*, 1947, 38 (*2*) : 70-76.

Discussion of the physical, social, and economic background of the project for the incorporation of the mandated territory into the Union of South Africa.

A LIST OF THE SURVEYED PEAKS IN THE WESTERN CAPE PROVINCE. *Journal of the Mountain Club of South Africa* (1946), 1947, No. 49 : 83-87.

Heights of more than 200 peaks are listed.

NOTES ON THE DISTRIBUTION AND DENSITY OF POPULATION IN CAPE TOWN, 1936. By E. Batson. *Transactions of the Royal Society of South Africa*, 1947, 31 (*4*) : 389-420. 6 figs.

At the time of the census, the population of Cape Town approximated 300,000, the area 50,000 acres. Ward boundaries, distribution of population, and of the European and non-European population, density of population, and ethnic boundaries are mapped.

THE DISCOVERY OF GOLD IN THE FREE STATE. By Sir E. Oppenheimer. *United Empire*, 1947, 38 (*5*) : 233-235. Discussion : 235-236.

A lecture on recent gold discoveries near Odendaalsrust, about 150 miles from Johannesburg, and on their social and economic implications.

AMERICA

REVUE CANADIENNE DE GÉOGRAPHIE is published by the Société de Géographie de Montréal (525 avenue Viger, Montreal 24), the annual subscription being $2·00. The first number (9×6, 32 pp.), issued in March 1947, contains an illustrated article, by Prof. Benoît Brouillette, dealing with the population, resources, and agriculture on the north coast of the St. Lawrence. The number also includes book reviews, educational matter, and proceedings of the Société.

CANADA OF TO-DAY. By B. Brouillette. *À travers le Monde*, 1947, 2 (*4*) : 147-154.

A condensed survey of geographical and human factors, with special reference to economic problems.

SEA-CONDITIONED NOVA SCOTIA. By W. R. Bird. *Canadian Geographical Journal*, 1947, 34 (*2*) : 57-85. 52 photographs.

PRINCE EDWARD ISLAND. By L. J. Burpee. *Canadian Geographical Journal*, 1946, 33 (*5*) : 192-217. 30 illustrations. 2 maps.

THE NEW DENMARK SETTLEMENT. By P. L. Sanford. *Agricultural and Industrial Progress in Canada*, 1947, 29 (*8*) : 117-118, 123.

A brief account of the thriving farming community established near Grand Falls, New Brunswick, by Danish pioneers in 1872, and now numbering 841 persons, with only 91 not of Danish ancestry.

MONTREAL. By R. Blanchard. *Revue de Géographie Alpine*, 1947, 35 (*2*) : 133-328. 24 figs. 26 plates. 61 references.

An outstanding monograph on the geography of Montreal, representing a detailed study of the site, development, population, and functions, or, in the words of the author, " l'auscultation de cette grande ville."

REFORESTATION IN ONTARIO. By E. J. Zavitz. *Canadian Geographical Journal*, 1947, 34 (*4*) : 156-180. 38 photographs. Map of Southern Ontario showing reforestation projects.

LAND UTILIZATION IN CENTRAL ONTARIO. By L. G. Reeds. *Economic Geography*, 1946, 22 (*4*) : 289-306. 21 figs.

RURAL DEPOPULATION IN SOUTH-WESTERN ONTARIO. By J. W. Watson. *Annals of the Association of American Geographers*, 1947, 37 (*3*) : 145-154. 3 figs.

SETTLEMENT PATTERN OF THE LISTOWEL REGION, SOUTH-WESTERN ONTARIO. By D. W. Kirk. *Economic Geography*, 1947, 23 (*1*) : 67-71. 5 figs.

THE WELLAND CANAL. By L. and R. Harrington *Canadian Geographical Journal*, 1947, 34 (*5*) : 202-215. 37 illustrations.

Brief summary of the history of the first, second, and third Welland Canals, and a well-illustrated description of the Welland Ship Canal, opened in 1932, and its traffic—6210 ships in 1945.

MANITOBA. By R. O. Macfarlane. *Canadian Geographical Journal*, 1947, 35 (*3*) : 124-152. 55 photographs. Map.

ALBERTA. By A. J. Hooke. *Canadian Geographical Journal*, 1947, 35 (*4*) : 154-177. 44 photographs. Map.

YUKON TERRITORY. By W. F. Lothian. $9\frac{3}{4}\times6\frac{1}{2}$. Pp. 52. 7 photographs. Map. Ottawa : Bureau of Northwest Territories and Yukon Affairs, 1947.

A summary of information on history, government and public administration, social services, towns and settlements, communications, tourist attractions, physical features, general geology, climate, aborigines, flora and fauna, mining industry, water power, fur industry, agriculture, and of regulations governing disposal of lands, and mining, game and fishing. 36 bibliographical references are listed.

BRITISH COLUMBIA. By J. Gough. *Canadian Geographical Journal*, 1947, 35 (*1*) : 2-35. 44 photographs. Map.

HIGHWAYS OF BRITISH COLUMBIA. By R. J. C. Stead. *Canadian Geographical Journal*, 1947, 35 (*2*) : 68-85. 29 photographs. Map.

EARLY EXPLORERS OF THE WEST. By E. Parker. *Canadian Alpine Journal*, 1946, 29 (*2*) : 213-228.

Notes on Daniel Williams Harmon and David Thompson, with a map of Thompson's exploration routes across the Rocky Mountains, 1800-1811. Cf. *S.G.M.*, 1945, 61 (*3*) : 89-92.

FRANCIS DRAKE AND THE CALIFORNIA INDIANS, 1579. By R. F. Heizer. *University of California Publications in American Archaeology and Ethnology*, 1947, 42 (*3*) : 251-302. 2 illustrations. Plates 18-21. Sketch map.

IZTACCÍHUATL AND THE HIGHEST ROPEWAY IN THE WORLD. By J. Merino Blazquez. *Boletin de la Sociedad Mexicana de Geografia y Estadistica*, 1946, 62 (*3*) : 483-508. 37 illustrations. 2 maps.

The third highest mountain in Mexico, Iztaccíhuatl (5286 metres), is now a national park. It is proposed to improve transport to the base, and to provide ample accommodation and other facilities for mountaineers, scientists, and other visitors. The scheme hinges on the construction of telpherage to the summit, where an hotel, observatory, and meteorological station are to be established. The national park is of exceptional interest, and the summit commands magnificent views of Orizaba, Toluca, and Popocatépetl, and towards the Mexican capital.

THE AGRICULTURAL REGIONS OF GUATEMALA. By E. C. Higbee. *Geographical Review*, 1947, 37 (*2*) : 177-201. 22 photographs. Map (1 : 2,750,000).

THE INTER-AMERICAN INSTITUTE OF AGRICULTURE. By K. Walker. *Bulletin of the Pan American Union*, 1947, 81 (*5-6*) : 321-326. 7 photographs.

The Inter-American Institute for Agricultural Sciences at Turrialba, Costa Rica, is a research centre and serves as an agricultural clearing house for the western hemisphere, and also maintains a rubber sub-station at Gatûn, Panama.

FOURTH GENERAL ASSEMBLY OF THE PAN-AMERICAN INSTITUTE OF GEOGRAPHY AND HISTORY, WITH NOTES ON A TRIP FROM CARACAS TO BOGOTA. By C. B. Hitchcock. *Geographical Review*, 1947, 37 (*1*) : 121-136. 14 figs.

FERNANDO DE NORONHA. By M. F. Levins. *Journal of Geography*, 1947, 46 (*5*) : 168-177. 4 photographs.

Description of the island group used as a penal colony by the Brazilian government, and as an emergency base and weather station by the U.S. army and navy.

THE POPULATION OF BRAZIL. By Prof. G. Mortara. *Revista Brasileira de Geografia*, 1945, 7 (*4*) : 631-648.

According to estimates based on the 1940 census, the population of Brazil on July 1, 1945, approximated 45,750,000, average density being 5·4 inhabitants per square kilometre. Distribution in the various states and federal districts is discussed with reference to nationality, sex, age, and occupation. During the last hundred years the total population has increased by about 39,000,000, of which only about 3,500,000 represent the excess of immigration over emigration.

OCEANIA

THE PULSE OF THE PACIFIC. By L. A. Cotton. *Journal and Proceedings of the Royal Society of New South Wales* (1946), 1947, 80 (*2*) : 41-76. 102 references.

A survey of strand line changes in the Pacific Ocean, showing a striking degree of correspondence along the continental shores and among the chief island groups.

THE INTERIOR OF EASTERN PAPUA. By G. H. Vernon. *Queensland Geographical Journal*, 1945-1946, 50 : 91-97. Sketch map and diagram.

A brief description of inland Papua and of the distribution of some of the more remarkable flowering plants.

SOME ASPECTS OF THE TECTONICS OF AUSTRALIA. By E. S. Hills. *Journal and Proceedings of the Royal Society of New South Wales* for 1945 ; 1946, 79 (*2*) : 67-91. 13 figs. 47 references.

RECENT DEVELOPMENTS IN WEATHER ANALYSIS IN AUSTRALIA. By W. J. Gibbs. *Australian Geographer*, 1946, 5 (*2-3*) : 47-51. 4 figs.

ASPECTS OF AUSTRALIAN DEMOGRAPHY. By W. D. Borrie. *Pacific Affairs*, 1947, 20 (*1*) : 42-52.

AUSTRALIA'S NORTHLAND AWAKENS. By H. Reidy and W. Goodwin. *Canadian Geographical Journal*, 1947, 35 (*2*) : 86-95. 14 photographs. Map.

Topography and resources, settlement and administration, war and post-war development of the Northern Territory are outlined.

ON GLACIAL LAKES IN THE KOSCIUSKO REGION. By J. A. Dulhunty. *Journal and Proceedings of the Royal Society of New South Wales* for 1945 ; 1946, 79 (*4*) : 143-152. 4 figs.

NEW ZEALAND'S POPULATION PROSPECTS. By G. N. Calvert. *New Zealand Geographer*, 1947, 3 (*1*) : 1-18. 5 figs.

The population of the Dominion has increased from 1,112,200 in 1916 to 1,746,300 in 1945, and a further increase to 2,505,600 by 1975 is forecast. Optimum population figures, the present age structure, geographical distribution and urbanisation, future growth, and validity of trends in forecasting are discussed.

ATLASES

THE ATLAS OF DISEASES : PROGRESS NOTE. By R. U. Light. *Geographical Review*, 1946, 36 (*2*) : 193.

Publications on medical geography in the past have generally been the work of medical men unassisted by geographers. Co-operative research, however, is essential, and the American Geographical Society has projected an *Atlas of Diseases*, the first contribution being the mapping and discussion of fluorine in U.S. water supplies [*ibid.* p. 177]. The atlas will be built up gradually and special cartographical techniques will be employed, each project finding its own design according to the special problems involved.

A GERMAN ATLAS OF EPIDEMIC DISEASES. By G. W. Anderson. *Geographical Review*, 1947, 37 (*2*) : 307-311.

A review, with list of contents, of the *Seuchen-Atlas* prepared by twenty-eight senior officers and edited by Dr. H. Zeiss, issued by the German army sanitation authority. The atlas, published as a series of six folders between 1942 and 1945 by Justus Perthes, Gotha, contains 217 pages (11×9 inches) of text, 70 black-and-white maps and graphs and 68 coloured maps. Obvious omissions tend to show that other maps were to have been included.

REVIEWS OF BOOKS

EUROPE

Prehistoric Britain. By Jacquetta and Christopher Hawkes. 8¼×5½. Pp. xvi+280. 30 figs. 22 plates. London : Chatto and Windus, 1947. 15*s*.

Since the late war there has been a notable increase in interest for archaeological work among the educated public. The place of prehistory among the humane studies is being recognised (the University of Oxford has indeed demonstrated this by its founding a new Chair in Prehistory last year), and there is a growing demand among those whose intellectual activities have been directed to other fields to know more about the results that have been achieved by the increasingly elaborate techniques of archaeology over the past fifteen years or so.

To those who want an authoritative and readable synthesis of the British material one can unhesitatingly recommend the Hawkes's book, free from any trace of pedantry or aridity, but backed by the authority of two of our leading prehistorians. The intimate relationship between man and the countryside is never forgotten : the really fine half-tone plates of field monuments are an epitome of Britain's geography—Cornwall, the Wiltshire downland, the Northumberland moors, the wet wildness of Orkney, and back to the sky-line of the Dorset coast—in all these areas we see the inter-relation between man and environment, and realise how even the relatively primitive methods of prehistoric agriculture must have transformed the landscape of Britain before the Roman Conquest by the reduction of forest areas. In an appendix there is a descriptive itinerary of Britain indicating the main prehistoric sites, with Scotland surveyed from the Border to the Shetlands. S. P.

The Riddle of Prehistoric Britain. By Comyns Beaumont. 8½×5½. Pp. 208. 21 illustrations. End-paper sketch map. London : Rider and Co., n.d. 18*s*.

Around the fringes of the world of scholarship there are to be found people who have decided that there is an international conspiracy to form all learning into a jealously guarded preserve, a " closed shop " which will tolerate no criticism which tends to alter a set of rigidly held convictions. Mr. Beaumont is one of these, and his aim (in the words of the publisher's blurb) is to " confound the experts " in geology and archaeology by demonstrating that " an advanced antediluvian civilization . . . the greatest the world has seen until now " was situated in Scotland, but unfortunately brought to an end by a comet hitting the earth in about 1322 B.C.

Now Mr. Beaumont does not realise that those of us who are concerned with the discipline of learning and the use and abuse of authorities, are quite prepared to accept the most revolutionary ideas in our own subject provided they are supported by evidence which stands up to the same searching tests as we apply in our studies to that on which our own working hypotheses are based. To accept Geoffrey of Monmouth and Professor Hawkes, Ezekiel and Sir Cyril Fox, as authorities on an equal footing, is to render the laws of evidence nonsense, and one is only surprised not to find the Prophetic Books of William Blake (the more pedestrian passages of which Mr. Beaumont's book not infrequently resembles) used as an argument to controvert the antiquity of Palæolithic man.

This book would be laughable (and indeed it often is) were it not for the harm it may do to the uneducated reader who is wholly uncritical of his sources. To him, Mr. Beaumont's book looks learned enough : he is not to know he is entering a dream-world of fantasy. S. P.

Forests and Forestry in Great Britain. By WILLIAM LING TAYLOR, C.B.E. 8½×5½. Pp. ix+172. 20 photographs. London : Crosby Lockwood & Son Ltd., 1945. 12*s* 6*d*.

This book appears at an appropriate time when there is good reason to hope that henceforth forestry—indispensable to the safety and prosperity of this Island Realm—will take its proper place in our national economy.

Mr. Taylor, a trained forester with long experience in the Forestry Commission and now a Commissioner, speaks with authority, but he writes not for the technical forester or the student, but to tell us all the straightforward story of our British Forests—what we have left undone in the past and how we should plan for the future.

He shows first how this natural heritage has been disregarded. But it was the late Sir Herbert Maxwell who wrote, "Here and there a few careful landowners have borrowed from foreign countries and put in practice the rules of good forestry, but by far the larger proportion of British woods are run on amateur lines, modified by local custom." "Here was a typical example of the things on many estates. The owner is generally devoted to his trees and regards it as a sacrilege to treat them as a crop. He takes pride in what he believes to be judicious thinning which is nearly always thinning carried to an injudicious extent so as to produce a maximum of great limbs and a minimum of clear stem. He dabbles in arboriculture but is ignorant of the principles of forestry, with the result that what might have been a productive woodland is turned into a mixture of arboretum, pleasure ground and game preserve, which seldom covers the expense of keeping—the poor crop is a reproach to all concerned in growing it." And yet it is these same forests that have come to the country's rescue in two world wars ! But how much easier would it have been for many of us and how much better for all of us had our forests not been so sadly neglected. The Forestry Commission came into being in 1919 and since then has acquired and planted large areas—as Mr. Taylor tells us, "The beginnings of over 250 British Forests have been planted in the last 25 years." But this is but a foretaste of what is required, an enormous afforestation programme must be carried out if we are to make good, even in a generation or two, the nation's deficiency of Forests. The British climate is admirably suited to the growing of trees: we have the land, we have the trees and we have the men—it behoves us to get on with the work. From an inevitably gloomy picture of the past Mr. Taylor turns with hope to the future in his chapters on Land Acquisition, on Trees to Plant, and on Forestry as a Career. In other chapters he discusses What Forests Produce—Perils and Pests—and Fire, and in another, the "Natural History of the Woods" which gives us an account, full of interest, of the Plants and Animals that make our woods their home. Two other chapters are entitled "Some other Values" and "Forests and Perpetual Profit," and these will have a special appeal for owners of private woodlands, and Mr. Taylor fully appreciates and acknowledges the value of such woodlands to the country as a whole.

Nor does he neglect the human side—forests as playgrounds—"almost a new thing in this country" with the Argyll National Park marking the "first practical conception of a National Park in these Islands."

And the employment that forests can afford. "Small holdings are natural adjuncts to forestry" ; settlement in small holdings is probably the soundest of all bases on which to populate the desolate mountain valleys of the North West and the silent glens to the north of the Highland Line, "where derelict cottages and deserted crofts speak eloquently of a husbandry that has vanished and where the sheep-walk and deer-forest have conspicuously failed to hold all the former dwellers. Many thinking Scotsmen believe that one of the chief hopes of restoring prosperity in upland districts lies in afforestation. That new forests would, in due course, bring men, money, and prosperity to the valleys and barren mountain-sides is certain."

The book is one which will appeal to geographers because they are interested in land utilisation ; it is illustrated by twenty excellent photographs. J. M. C.

Scotland : A Description of Scotland and Scottish Life. Edited by HENRY W. MEIKLE, C.B.E., D.LITT., LL.D. 9×6½. Pp. xii+263. Text illustrations. 96 plates. 9 plates in colour. End-paper maps. Edinburgh : Thomas Nelson and Sons Ltd., 1947. 15*s*.

In the introduction to his *Scottish History* (1935) George Scott Moncrieff modestly declared the aim of that book to be the provision of "a second primer for the intelligent foreigner." Where the intelligent foreigner might find his "first primer" he discreetly forbore to mention. It may be claimed, however, without undue exaggeration that the foreign visitor to our shores—and to our Festival and Exhibition—will have to look long and far before he can find any introduction to our Scottish way of life that will rival this comprehensive and detailed survey edited by H.M. Historiographer in Scotland.

The planning of the book follows a sound Scottish tradition. Like the sixteenth-century History of Bishop Lesley, Queen Mary's chaplain, it opens with a study of the geography and the natural history of Scotland. But whereas the good Bishop dealt with all this himself, Dr. Meikle has the aid of expert authorities : Professor A. G. Ogilvie writes on Physical Features and Scenery ; Dr. H. R. Fletcher on Flora and Afforestation ; Seton Gordon on Fauna. History and Archaeology are followed by studies of every aspect of our national

life in which a foreign visitor is likely to be interested ; and in each study, the significance of the Scottish contribution to contemporary civilisation is stressed with a modest pride far removed from the bland assertiveness of the eighteenth century challenge : " Whaur 's your Wullie Shakespeare noo ? "

The text is supplemented by a series of plates that should ensure for the book a permanent place on the shelves of any traveller's library. The camera studies are of outstanding merit ; the coloured reproductions, ranging from the portraits of Allan Ramsay and Raeburn, through the landscapes of Horatio McCulloch and William McTaggart, to the flower studies of S. J. Peploe and W. G. Gillies, provide a vivid and enlightening epitome of the chief movements in Scottish art.

It is to be hoped that the book will find many readers and students among those whose residence in Scotland is not merely seasonal. The range of the topics dealt with and the uniformly high standard of treatment, combined with the attractiveness of the illustrations so abundantly provided, render it a highly desirable companion to the work in history and in geography carried on in our Scottish schools and should commend it to those educational pioneers who have introduced into the school curriculum a treatment of current affairs.

G. P. I.

The Surnames of Scotland : Their Origin, Meaning, and History. By GEORGE F. BLACK, PH.D. 10×7. Pp. lxxii+838. Frontispiece. New York : The New York Public Library, 1946. $10.00.

Both in his Introductory Essay and in his detailed, documented examination of individual surnames, Dr. Black has made a very valuable contribution to an aspect of our Scottish history that in the prevailing specialisation of modern historical studies is only too apt to be ignored : the light that may be thrown on early history by the study of language.

The historian who compares the early records of the Parliament of Scotland with the corresponding records of the Parliament of England is conscious at once of a striking difference in the official language employed : the Norman French of the Parliament of England is very rarely employed in Scotland, where the official language is either Latin or Scots ; and the question of influence of the Scots tongue not only on the consolidation of the nation but on the early evocation of a strong feeling of nationality is one of the many problems of early Scottish history that urgently demand consideration. In this badly neglected province Dr. Black is a welcome pioneer. His scholarly, comprehensive and penetrating Introductory Essay is based on wide research handled with competence and skill. His studies of individual surnames provide a wealth of material invaluable to the antiquarian, to the genealogist, and to the historian.

G. P. I.

Shetland and the Shetlanders. By W. P. LIVINGSTONE, F.R.S.G.S. 7×4¾. Pp. x+229. 31 plates. End-paper maps. Edinburgh : Thomas Nelson and Sons Ltd., 1947. 7*s* 6*d*.

For anyone anticipating a visit to the Shetlands this is a book that should be read. It is neither a guide book in the ordinarily accepted terms, nor the fleeting impressions of a tourist, but a thoughtful study of a kindly, shy people who repudiate being called Scots, and who, though their manner of life in the main is hard, yet seem contented. It is the author's conviction that in order to understand and interpret a people, the best and, in fact, the only way is to live among them. This he did, and he has succeeded in giving us vivid and dramatic pictures of everyday life among the crofting and fishing communities.

The book, therefore, not only gives a factual and informed account of the Islands and people, but is enlivened by personal details and the sense of atmosphere which can only be drawn in faithfully from an intimate knowledge. The book is well planned—the cycle of the seasons on the crofts satisfying—whilst the excellent illustrations add much to the interest.

J. R.

Autumns in Skye, Ross, and Sutherland. By T. RATCLIFFE BARNETT. 7½×5. Pp. xiii+198. 24 illustrations from photographs by Douglas Guthrie and Archibald E. Robertson. End-paper sketch maps. Edinburgh : John Grant Booksellers Ltd. Revised edition, 1946. 7*s* 6*d*.

This new and revised edition of the late Dr. Ratcliffe Barnett's wanderings in Skye, Ross, and Sutherland will be welcomed by his many admirers. Dr. Barnett has brought to light some little known aspects and episodes of Highland life and scenery, and his pages are always refreshing. He is usually such a trustworthy authority that it is unfortunate the book should still treat as fact (p. 173) the fantastic story of a viking's body having been found lifeless but intact—armour, red moustache and all—in an iceberg on the east coast of Greenland, whence it was taken to Copenhagen. This tale, which probably originated in Hollywood, actually reached Scottish newspapers some twenty years ago, but it was, of course, a preposterous hoax. In this revised edition of Dr. Barnett's book the editors should have seen that it was omitted, as it mars an otherwise charming and reliable volume of travel sketches.

I. W. H.

Western Highlands. By ARTHUR GARDNER, M.A., F.S.A. $8\frac{3}{4}\times5\frac{5}{8}$. Pp. vii+111. 300 illustrations. London: B. T. Batsford Ltd., 1947. 21*s.*

This book is concerned with that part of Scotland where the rivers run to the west from Arrochar in the south to Cape Wrath in the north, and also with the islands of Skye, Mull, and Arran. Mr. Gardner deals with his subject from the point of view of the middle-aged hill walker who has a motor car at his disposal to take him from his centre to the mountain of his choice. He looks generally for the easier way to the summit, rather than the more difficult, and is more interested in the scenery than in rock climbing. He has obviously explored the whole region, and he writes with personal knowledge. The book has a warmth and personal note that one does not find in a guide book, and can be warmly recommended to anyone thinking of exploring the Western Highlands. Mr. Gardner gives most useful information about hotels in each district.

Although the illustrations are numerous, the reproduction of many of them leaves much to be desired.

We think the author is rather hard on the Forestry Commission. The old trees which he admires so much were shaped through being grown in close woodland. It would seem that the one hope for the present deplorable state of the population in the Western Highlands is the development of forestry. One of the great attractions of the Swiss Alps as compared with, say, the New Zealand Alps is the old civilisation and thriving life of the people. Unless something can be done to retain and even increase the population of the Highlands, they will become as deserted as the New Zealand Alps, and much of the present attraction will be lost. A. H.

Tramping in Arran. By TOM S. HALL. $6\frac{3}{4}\times4\frac{1}{4}$. Pp. 112. 11 illustrations. 2 sketch maps. Goat Fell indicator chart. Falkirk: The Wayfaring Association. Third edition (revised), 1947. 5*s.*

Those who are fortunate in being able to plan, spend, or remember a holiday in Arran will be pleased with this useful and entertaining guide to excursions, and with the illustrations. Chapters added to this edition deal with the route from North Glen Sannox to Cìr Mhòr and Glen Rosa, and with the walk from Loch Ranza to the hill between Glen Chalmadale and Gleann Easan Biorach, thence to Catacol Bay. J. H. K.

Autumn in Kyle and the Charm of Cunninghame. By D. C. CUTHBERTSON. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. 216. 25 illustrations. London: Herbert Jenkins Ltd., N.D. 12*s* 6*d.*

Mr. Cuthbertson describes his book as "not a history but rather a series of rambling notes and chapters," designed "to create that atmosphere of peace and contentment which still envelops so many of the inland villages and bypaths"; and this is indeed an apt description of it. It distils a love for the land of Burns—especially the pleasant countryside of hayfields and pastures, woods and birds and streams, a country rich in lore, traditions and literary associations. The "lad of Kyle" dominates the scene, but leaves a corner for Old King Cole and William Wallace, James Boswell and George Douglas Brown, Cunninghames and Montgomeries and Covenanters. This would be a good book for the holiday-maker to put in his pocket or the exile to have at his bedside to capture the spirit of the place.

For such readers Mr. Cuthbertson writes. He rescues "ancient lore" which is "gradually being forgotten," and he conveys the sense of continuity through change and of social betterment, as, for example, in the three houses of Auchinleck. He indicates the development of commercial enterprise in some places (as in the growth of Catrine), and the decline of local industries in others (snuff mills at Auchinleck and Cumnock; muslin weaving at Tarbolton; bonnet-making at Stewarton; cutlery at Kilmaurs). Symptomatic of social changes has been the creation of new parishes at Sorn and Stair and the suppression of Barnweil.

Such information, however, is thrown in casually by the deft hand of the impressionist painter. The author's picture is not meticulous in detail. Though the scholar can point to inaccuracies of fact (*e.g.* that "Glencairn is the first recorded Scottish peer"), Mr. Cuthbertson pleads repeatedly that he writes "from memory" without opportunity or leisure to verify his statements. Even his expeditions were sometimes cut short by restrictions of time and transport; and many of his jaunts were apparently taken before the war. His style is rambling and sometimes careless, but he writes with a light touch. He loves his theme and transmits his love to his reader. A. I. D.

In and around Durham. By F. H. RUSHFORD. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. 64. 40 illustrations. 2 maps. Durham: F. H. Rushford, 1946. 5*s.*

Descriptions of the principal buildings and points of historic interest are combined with a pleasant guide to a number of walks, and are embellished by good illustrations. J. H. K.

Bradford : The Growth and Development of a Great City, 1847-1947. 9¼×6¼. Pp. 98. Colour prints, photographs, and diagrams. Bradford : The Bradford and District Newspaper Co. Ltd., 1947. 5*s*.

The centenary of the granting of the Charter of Incorporation to Bradford has occasioned the publication of this story of the rapid development of the city. The story, clearly told and remarkably well illustrated, is not altogether without interest to geographers. The first part of the book deals with the history and functions of Bradford, including information on planning. The second part is devoted to indoor and outdoor recreation, its twenty pages being followed by the third section, of merely four pages, devoted to Bradford and the Wool Industry. Mines, quarries, and climatic conditions are described in the fourth, and Bradford's sphere of influence, in the fifth and final part. J. H. K.

Journeys in the Sun. By Douglas Goldring. Foreword by Hugh Kingsmill. 8½×5½. Pp. xii+256. 18 illustrations. London : Macdonald and Co. (Publishers) Ltd., 1946. 10*s* 6*d*.

This selection from travel books on France, Italy, and the Balearic Islands, written by the author between the wars, is recommended to those who would share his " cross-Channel urge " and care-free mood—" I would be in some sun-bathed Latin town haunted by ghosts of happier ages dead."

These tales of his wanderings round riviera coasts and mountains deal pleasantly and at some length with personalities, historic buildings, cafés, and wines, encountered in the quieter provincial towns and holiday resorts, and in the more remote villages. They are illustrated with excellent photographs. F. S.

Denmark 1947. 7¼×5. Pp. 280. 104 illustrations. End-paper maps. Copenhagen: Royal Danish Ministry for Foreign Affairs and the Danish Statistical Department, 1947.

This admirable handbook on Denmark, published in English, which was formerly issued yearly (in alternate languages, English, French, and German) by the Danish Ministry for Foreign Affairs, makes its first and most welcome reappearance since the war, and contains a store of information of every description on Europe's oldest kingdom. No traveller to Denmark should be without it, for here are the authoritative answers to all the questions he is likely to ask, from the relationship of the Royal House of Denmark to the other royal houses of Europe, down to the minute statistics of trade, shipping, housing, and so on. There are sections devoted to education, the museums, agriculture, social conditions, shipping, and innumerable other subjects. Every aspect of life in Denmark is here considered, and this most useful volume is profusely illustrated with exceptionally fine photographs. It is an admirable publication which other European countries might well seek to emulate for the benefit of foreign visitors when the good days of European travel come again.

I. W. H.

Poland and Russia, 1919-1945. By James T. Shotwell and Max M. Laserson. 9×6. Pp. vii+114. Sketch map. Published for The Carnegie Endowment for International Peace. New York : King's Crown Press, 1945 ; Second printing, 1946. London : Geoffrey Cumberlege. $2.25 or 15*s* 6*d*.

This monograph is of great value to the political historian and to the student of the political problems involved in the post-war settlement of Europe. The attempt to find a frontier, where no natural one exists, between different traditions, economies and ideologies was symbolised in " The Curzon Line." The authors discuss the significance of this line and elucidate the policies relevant to the frontier problems of the interested states, Poland on the one hand and her eastern neighbours on the other.

The book is well documented, and there is an excellent bibliography. In a number of appendices are given the more important official statements, including declarations by the governments concerned, and the relevant clauses of the Yalta and Potsdam agreements.

S. C. F.

Introducing the U.S.S.R. By Beatrice King. 7×5. Pp. xii+112. Illustrated. London : Sir Isaac Pitman and Sons Ltd., 1946. 5*s*.

Mrs. King's little book in its own way makes a valuable contribution to the literature in English on the U.S.S.R. Its aim is to give some idea of the Soviet peoples as folk like ourselves, of real flesh and blood, with family ties and interests, joys and sorrows, daily work and leisure-time activities. It thus represents a contribution to the extension of human understanding and sympathy of a type which women should be peculiarly fitted to make, and which they are perhaps called upon to make, in these days of air transport and atomic energy. A feature which adds greatly to the appeal and interest of the book is that, in many cases, Mrs. King illustrates her point by describing the circumstances or conversations of individuals and families. C. P. S.

Russia and the Russians. By EDWARD CRANKSHAW. 7½×5. Pp. 256. London : Macmillan and Co. Ltd., 1947. 9*s* 6*d*.

The plan of this book illustrates well the intimate connection between geography and national history and character. The endless plain is described on which the Russians have always lived : the plain that promotes the individualist centrifugal bent, the enquiring exploring habit of body and mind, and at the same time invites invasion. And invaders have never been lacking : Scandinavians, Tartars, Poles, French, and Germans have had their turn. Especially the Tartars have left their mark on Russia and its institutions, above all on the autocracy whether of the Tsar or of Lenin and Stalin.

In his discussion of contemporary affairs, the author takes a courageous line not calculated to make for popularity in Russia or in Britain. In face of the tremendous fact of Russia, which adds annually to its population something like the whole population of Scotland, the West can adopt ultimately only one of two policies : conquest or love, *i.e.*, recognition, understanding, tolerance. Our own public conscience rules out the very idea of deliberate conquest by America and Britain, so we have only the other policy to follow : somehow or other by sympathy and intelligence to bridge the gulf between us. It is maintained that the rulers of Russia are far too distracted by their own domestic problems to contemplate the mere thought of anything but defence in foreign politics ; their faith in Marx and their recent experience make attack from the west appear to them inevitable.

There is no attempt to whitewash present-day Russia. Indeed, the treatment of the subject suggests that of a foreign visitor to Britain who should begin his study with a description of Limehouse, Barrow-in-Furness, Durham, and Clydeside in the years of depression, before going on to mention this " green and pleasant land " or " the stately homes of England." The pictures of Russian muddle and fecklessness are absolutely ruthless. These things are not the essentials.

The really great achievements of the Russian people, more or less well known already, are briefly indicated. But what most concerns the author is to get the reader to *feel* the Russian background and to realise the temperamental difference between Russians and ourselves, the difference between doctrinaire and empiricist, between whole-hogger and compromiser. The great gift that the Russians bring is the capacity of seeing things as they are, without blinking an intellectual honesty that has, as its reverse, a sort of defeatism which is too ready to embrace evil when *total* good seems to be impracticable. The great gift our own country offers to the world, hope, has as its reverse a proneness to self-deception leading to the hypocrisy that makes us say, for example, " the rights of small nations " when we mean " oil " ; we try to run ideals and expediency in the same harness.

The general conclusion is that, if such incompatibility is to be overcome, if we are to live as free human beings facing the task of pitting ourselves against the universe instead of against each other, national sovereignty will have to be abandoned and our whole conception of society be remodelled.

The book is so full of challenging thought presented in fresh and unexpected light that no brief notice could do it justice. R. T. C.

The Population of the Soviet Union : History and Prospects. By FRANK LORIMER. 10½×8. Pp. xiv+289. 31 figs. 22 plates. 512 references. Geneva : League of Nations, 1946. London : George Allen and Unwin Ltd. 15*s*.

After giving an outline of Russian history, which is a masterpiece of condensation, and an account of the population and economic structure of the Russian Empire, the author of this important monograph examines the changes in population which occurred during the period 1914-1926, and the ethnic composition, occupations, degree of urbanisation, literacy, etc. of the population in 1926, the year of the first Soviet census. He then shows how, during the period of the Five-Year Plans, the Soviet economy was transformed from extreme dependence on peasant agriculture and related occupations to an economy with a fair balance between agriculture, industry, and services.

The changes in distribution and age and sex composition of the population are discussed for 1926-1939, and then an attempt is made to assess the effects of the war. Although in mere numbers the losses will likely be more than made up by 1950, the abnormal age and sex distributions will affect the character of society for many decades. Finally, Dr. Lorimer deals with cultural trends, the remarkable increase in literacy and secondary and higher education, changes having beneficial effects beyond measure. He believes there is a prospect of increasingly efficient distribution of population in relation to economic resources and production, and of rapid advance in health, skills, cultural resources, and equipment.

Dr. Lorimer's book has the advantage of his having consulted a wide range of Soviet writings and statistics, and the bibliography also includes references to English, French, and German publications. Taking it as a whole, this is a most comprehensive and thorough study. Even if some geographers find the mathematical and actuarial sections of some chapters difficult to follow, or tedious, there still remains a wealth of information to be gleaned. The book is amply illustrated and also contains extensive appendices, largely statistical tables. C. P. S.

Vsesoyuznoe Geographicheskoe Obshchestvo za Sto Let. [*The Centenary of the All-Union Geographical Society.*] By L. S. Berg. $8\frac{3}{4}\times5\frac{5}{8}$. Pp. 264. 42 illustrations. Moscow and Leningrad: Akademiya Nauk SSSR, 1946.

At least some of the clouds obscuring or dimming the east-westward and west-eastward outlook originate in differences of expression. Yet Russian is a precise language, by no means too difficult to acquire, and in which has been recorded a treasury of information more valuable than is generally appreciated in the west, and more accessible. The Russian contribution to geography is so considerable that a sketch of its more salient features may well serve as an inducement to further study of the subject. Such an outline has been provided on the occasion of the centenary of the Geographical Society of the USSR by its President, on whom was recently conferred the Honorary Fellowship of the Royal Scottish Geographical Society.

In this book, published in the Popular Science Series of the USSR Academy of Sciences, Professor Berg has given more than an outline—he has distilled the essence of the activities of Russian geographers, and recorded the more outstanding publications, including the periodicals, issued by their Society. The latter functions not only in Moscow and Leningrad but in numerous branches, from Archangel to Simferopol and Erevan, from Saratov to Tashkent, Omsk, Irkutsk, and Petropavlovsk.

The chapters of the book deal with geography in Russia to the middle of the nineteenth century; the foundation and early years of the Society; the struggle against German groups within the Society; P. P. Semenov's journeys and activities; the work of the Society in Central Asia, Siberia, and the Caucasus; exploration in Central Asia; notable voyages to other countries; research in physical geography; transactions of the ethnographical section; the statistical section; research in human geography; the organisation of the Society and its educational function; the activities of the Society in Soviet times. Through the text and the illustrations may be glimpsed the personalities of Tian-Shanskii, Wrangel, Przhevalskii, Kropotkin, Shokalskii, and of many other Russians who have rendered to geography services which transcend political frontiers.

The record is one of which Russia may well be proud, and is admirably reviewed in this book, which provides not only an appreciation of a very distinguished Society—one of the oldest of the geographical societies in the world—but abundant evidence of its perennial vitality. J. H. K.

ASIA

A Pilgrim in Arabia. By H. St. John B. Philby. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. 198. Frontispiece. 82 illustrations. London: Robert Hale Ltd., 1946. 16*s*.

Mr. Philby has given us a selection of essays on Sa'udi Arabia and one on a holiday in Persia in 1932. This latter essay makes pleasant and interesting reading for the general reader.

The student of Islam and of Arabian history will find the essays dealing with the pilgrimage to Mecca and with the court of H.M. the King of Hejaz-Nejd of absorbing interest. In Mr. Philby's previous writings, the character of Ibn Sa'ud—one of the greatest men of our age—has been clearly and strongly drawn. Here parts of that drawing have been filled in with sure and revealing strokes. It is a weakness inherent in all Arabian rulers to try to combine in their persons all the offices of state, from King to customs clerk, and their states suffer thereby.

All that Mr. Philby writes on Arabia is of vital interest to student and official alike. This collection of essays is no exception. His description of the pilgrimage should be read in conjunction with Burton's, for comparative and historical reasons. M. O. B.

Aden to the Hadhramaut: A Journey in South Arabia. By D. van der Meulen. Foreword by Sir Bernard Reilly, K.C.M.G., C.I.E., O.B.E. 9×6. Pp. xvi+254. 91 illustrations. Sketch map. London: John Murray, 1947. 18*s*.

In 1932 the author and his friend Von Wissmann described their first visit to the Hadhramaut in *The Hadhramaut: Some of its Mysteries Unveiled.* They had found a fantastic land of palaces and millionaires, unable to extricate itself from anarchy and bloodshed, and crying for foreign intervention to bring it peace. It resulted from that book that, in 1934, London sent Mr. and Mrs. Harold Ingrams—with little money and no troops—to pacify a warring country about the size of Scotland. About four years later, Van der Meulen and his friend returned to find the Ingrams in the middle of their great task.

Van der Meulen chose to visit the Hadhramaut by no easy route. He desired to see for himself the inner heart of the British Aden Protectorate, and so, forceful of personality, patient, observant, a master of all the arts of Arabian exploration, he led his companions through the dark and bloody highlands of the Mushreq, to the uneasy fringes of Ingrams' peace, and on to meet Ingrams himself in the middle of this gigantic task.

For the general reader here is romance and danger in an unknown land. For the few who know that fierce country Van der Meulen's pages will evoke again the smells of burning

dung and timber, the eeriness of the vast, empty gorges, and all the pains and alarms of Arabian travel. And, if his first book inspired official interest, one hopes that this will draw Westminster's urgent attention to an ancient race of men who deserve better of us than to be left to bleed to death in the tyranny of the blood-feud. M. O. B.

The Economic History of India: 1600-1800. By RADHAKAMAL MUKERJEE, M.A., PH.D. $9\frac{3}{4} \times 6\frac{1}{2}$. Pp. xxiii+195. 5 maps. Memoir of the United Provinces Historical Society. Bombay: Longmans, Green and Co. Ltd., N.D. *Rs.* 7-8.

Compiled as a lecture series, these chapters outline the extension of the weaving of cotton and silk in India, in 1600-1800, and the "economic downfall" during the next fifty years, which was "as sudden as it was complete and unprecedented." The author maintains his deeply social outlook and his concern for the welfare of the people as a whole with a wide range of facts. Here and there, these are systematised, notably in the attempt to relate the trend of wages, 1600-1940, in terms of cash, food-grains, and thus of real wages. In the author's view India's de-industrialisation led to a fall in real wages to one half that in 1600. Deliberate power-control by European rivals, and the London East India Company's final naval and military success, were essential to economic dominance. Professor Mukerjee discusses social stratification and the enforced migration towards the forests of village communities, replaced by warlike, feudalised immigrants. The sketch maps also indicate the author's concern with geographic relationships. A. G.

Secret Siberia. By EMIL LENGYEL. 9×6. Pp. 285. 9 illustrations. End-paper map. London: Robert Hale Ltd., 1947. 15*s*.

This is not a revelation of secret and dire deeds but, rather, an interesting and instructive history. The nine chapters deal with the land, climates, and peoples; the gradual Russian penetration of Siberia; the initiation and construction of the trans-Siberian railway; exiles, convicts, and prisoners of war; the disturbed situation in Siberia following the revolution in Russia; the spread of communism and the results of the three five-year plans; the extension of these plans within the Arctic Circle; the Buriats, Mongols, and Jews; the Soviet Republics of Central Asia. An epilogue closes the book, bringing events up to date.

The author was an Hungarian prisoner of war in Siberia, so was in a position to see for himself, and collect information. His book is a valuable summary from which one may draw the conclusion that Siberia has a future, gives Russia a position of great strength, and that Russian expansion in the Far East is not finished. There are nine illustrations and a diagrammatic map which strangely enough does not show the railway from Harbin to Port Arthur, or any connection leading into China. W. O. L.

AFRICA

Le Congo Physique. By MAURICE ROBERT. $11 \times 7\frac{1}{4}$. Pp. 449. 70 figs. 29 plates. Published under the auspices of the Comité Spécial du Katanga. Liège: H. Vaillant-Carmanne S.A. Third edition (revised), 1946. 400 *fr.*

The first edition of this work was written in 1919 when comparatively little was known of Central Africa, and when the Congo was probably less developed than most African colonial territories. Many changes have occurred in the Congo since its first unhappy experience of Belgian rule, and some authorities would claim that it is now—largely as a result of the "dominer pour servir" attitude—perhaps the most promising of all African colonial territories. The war brought accelerated change to all Africa but to no part of it more than the Congo, where development and prosperity leapt forward. Its uranium ores alone have brought it not only wealth but a new world importance.

It is very opportune, therefore, that a new study of the physical geography of the Congo should now become available, particularly as the *Atlas du Katanga* has also just been completed. The second edition of *Le Congo Physique* appeared in 1942; that a third—that under review—should have been possible so soon is considerable testimony to its worth.

The greater part of the book is given over to geological considerations, with important sections on morphology and on minerals. Climate and biogeography have substantial chapters, and soils, ground-water, hydrology, and hydro-electric power are also dealt with. Each aspect is exhaustively studied, often practically from first principles, suggesting that the book may be intended for the use of the general public—or at least that part of it employed in the Congo. On the other hand, it is by no means a "popular" book—the degree of technical detail entered upon being usually quite considerable and in some cases possibly excessive, as for example when the hydrogen ion concentration of soils is embarked upon.

While adequately illustrated otherwise, there are perhaps not quite as many maps as one would wish. R. M.

AMERICA

Behold Our Green Mansions : A Book about American Forests. By RICHARD H. D. BOERKER. 9×6. Pp. xv+313. Photographs and diagrams. Chapel Hill : The University of North Carolina Press ; London : Geoffrey Cumberlege, 1945. $4.00 or 24*s*.

There is no space in a short review to do justice to a work so comprehensive as the one now under consideration, but if what I write induces you to "Behold our Green Mansions" I am confident that I shall have earned your gratitude.

The Green Mansions are America's forests, and it might be supposed that a book on American forests written for readers in America would hold little interest for us, but, on the contrary, it will not fail to appeal to everyone everywhere with a liking for the out-of-doors. Leaving aside some parts of a chapter or two, more especially concerned with forest areas and forest problems in the U.S.A., the rest is a remarkable, fascinating and stimulating story.

Early in the book the writer quotes from John Ruskin, "God has lent us the earth for our life. It is a great entail. It belongs as much to those who are to come after us as to us, and we have no right, by anything we do or neglect, to involve them in any unnecessary penalties, or to deprive them of the benefit which was in our power to bequeath". This is the theme of the book—the earth as a natural heritage which we should use wisely for our own benefit, but pass on to our descendants unimpaired.

That such an ideal is wholly practicable is the author's creed, and he shows how forests may be properly managed to produce a permanent supply of timber and yet at the same time be an abundant source of benefit and pleasure to people alike of the country and of the town.

To mention some of the headings will give some idea of the scope and comprehensiveness of the work. Forest Resources, The Forest Home of Wild Life, Forest Erosion and Hydro-electric Power, the Recreation of the People, Timber Products—Maple Syrup and Christmas Trees—the Farmers' part in supporting Forestry, Taxation, the Acquisition and Improvement of public Fishing Areas, Camping Grounds, How Community Forests are established. Like America, we too have long neglected our natural heritage. Here are many suggestive ideas which we in this country might adapt and apply, with great advantage to ourselves and to generations that come after us. J. M. C.

Hitch-hiking the Alaska Highway. By GERTRUDE BASKINE, M.A., F.R.C.G.S. $8\frac{3}{4}\times5\frac{5}{8}$. Pp. x+317. Toronto : The Macmillan Company of Canada Ltd., 1946. 12*s* 6*d*.

Mrs. Gertrude Baskine 'gate-crashed' the Alaska Highway in 1943. Though she is chiefly concerned with the fact that she was "the first woman to receive a military permit to cover overland the Alaska Military Highway while it was still under construction," she gives a spirited and interesting account not so much of the Alaska Highway as of the type of men (and some women) who helped to construct it.

The book is not illustrated, but a map would have greatly helped to elucidate the author's journey, which is rather involved in the last few chapters when she went to and fro from Fairbanks by plane, visiting Fort Yukon to the north and Skagway to the south. She reached Edmonton again 'On Canadian Wings,' flying from Whitehorse. I. W. H.

The Last Trek of the Indians. By GRANT FOREMAN. 9×6. Pp. 382. 7 maps. Chicago : University of Chicago Press, 1946. $4.00.

Former dealings with the red man form a chapter in the early history of the Government of the United States upon which one cannot dwell with pride. The story of the last trek of the North American Indians makes tragic reading, though Mr. Foreman tells it without sentiment, more as a matter-of-fact historical record than a story, each chapter being carefully annotated.

The first treaty signed by the infant government was with the Delaware Indians in 1778, when America was at war with Britain and in desperate need of their aid. It was a "subject of great interest and novelty" which astounded the American commissioners at Ghent, in 1815, when Britain stipulated that her Indian allies were to be included in the peace terms and a boundary be settled between their domains and those of the United States, America contending that the Indians were not proper parties to the treaty. Throughout the greater part of the nineteenth century, the Indians were helpless victims of the white man's greed and treachery. When they sought justice in American courts, their word could not be taken against that of the lowest white criminal. In the Sand Creek massacre (1864) nearly two hundred friendly and unarmed Cheyennes were slaughtered. When in 1878 the Ponca chief Standing Bear was arrested when making his way to the ancestral burying ground to inter the body of his little son, a writ of habeas corpus was applied for, but the government held that the chief was not a 'person' within the intent of the constitution. So eloquently did Standing Bear plead his cause at the trial that Judge Dandy filed his famous decision, a landmark in American jurisprudence, that an Indian is a "person the same as a white man, and similarly entitled to the protection of the Constitution." The book is a valuable contribution to North American history. There are maps showing the territories assigned to the various tribes, and there is an excellent bibliography.

I. W. H.

New York. Photographs by ANDREAS FEININGER. Introduction by John Erskine. Picture text by Jacquelyn Judge. 14½×10. Pp. viii+103. 96 photographs. End-paper maps. Chicago and New York : Ziff-Davies Publishing Company, 1945. $5.00.

No writer, not even O. Henry, can adequately portray New York, and though Mr. Erskine is enthralled by the protean character of the city and describes it well, his remarks but serve as an introduction to the interpretation of its beauty and its squalor, its dignity and stridency, and of the life of its inhabitants presented by means of photographs. Mr. Feininger is an architect who planned his camera studies in advance, and has avoided many purely pictorial motifs in order to convey his impression of the human melting pot.

Some may perhaps deplore that such a series of remarkable photographs was not extended to include many views characteristic of Greater New York, but nevertheless one will be content with the portrayal of the buildings and life in Manhattan ; and the Upper Bay and Coney Island are also represented. The end-paper maps, too, are interesting. One shows the five boroughs and the main districts of Greater New York, another the main streets and parkways of Manhattan, and yet another the business and shopping districts with locations of national centres. Another useful map shows where the photographs were taken, with arrows indicating direction of view, and numbers referring to the relevant pages. A postscript by Mr. Feininger deals with his motives and methods. J. H. K.

Jungle Journey. By JO BESSE MCELVEEN WALDECK. 8½×5½. Pp. 255. Illustrations by Kurt Wiese. New York : The Viking Press ; Toronto : The Macmillan Co. of Canada Ltd., 1946. $2.50.

This pleasantly written account of a journey in the interior of British Guiana does not purport to be a serious contribution to geography, notwithstanding the fact that the author's husband was engaged in exploring the source of the Cuyuni River. A map would have added to the enjoyment of the reader, who is left in vague uncertainty regarding the route of the expedition. Nevertheless, the pen-pictures of native life and customs, of transport difficulties, and of flora and fauna (including ants, bees, hornets, and other stinging creatures), fill one with admiration for the woman who accomplished the journey. The book is clearly printed, and the illustrations are well suited to it. D. G.

OCEANIA

The Pacific Ocean. By FELIX RIESENBERG. 9×5½. Pp. 284. Decorations and 6 maps by Stephen J. Voorhies. London : Museum Press Ltd., 1947. 18*s*.

This is a popular history of the opening up of the Pacific Ocean and a British edition of an American original. Useful chapters on the discoveries by the sealing and whaling expeditions, and by the Wilkes Expedition (1838-1842), cover ground which is not generally known.

The greatness of American achievement looms large in the final chapter, and rightly so, but the reviewer must protest at the inference that the first steamships—other than the Spanish-owned *Telica*—on the Pacific were American. Wheelwright, the United States Consul at Valparaiso, failed completely to interest American capital in his steamship project and so turned to Britain. The Pacific Steam Navigation Company was from the outset entirely British—inspired by an American. C. R. V. G.

Waterless Horizons. By MALCOLM UREN and ROBERT STEPHENS. 8¼×5¼. Pp. 255. 44 illustrations. 7 sketch maps. Melbourne : Robertson and Mullens Ltd. Fifth edition, 1945. 10*s* 6*d*.

Waterless Horizons has its origin in the authors' desire to pay tribute to Edward John Eyre. Eyre's main ventures were to discover good land north of Spencer Gulf and to find a stock-route between South and Western Australia. Both were failures so far as their immediate objects were concerned. Failure, however, was in no way attributable to Eyre himself, for time has proved that those things which he sought simply do not exist. Earlier explorers in Australia had the good fortune to find rivers—even if sometimes they were of only seasonal flow—and good sheep country. But Eyre was unlucky, as his journeys revealed nothing but deserts and salt lakes. Eyre's reputation is that of the explorer " who found nothing." Instead of being classed as a failure, should not Eyre be given an especial place of honour in the annals of Australian exploration ? Did he not shatter the erroneous belief that all the island-continent was suitable for settlement ? Was he not the first man to reveal the real character of half Australia ?

Waterless Horizons gives an excellent and full account of Eyre's work, but digressions of only local interest occasionally make the thread of the story rather difficult for the non-Australian to follow. The maps are poor. Frequent references in the text to longitude render the omission of the meridians very unfortunate. The reader would like to see a map showing journeys in New South Wales and Victoria, but presumably the establishing of Eyre's routes in the two south-eastern states has not proved possible. C. R. V. G.

POLAR REGIONS

Polar Exploration. By ANDREW CROFT. 8½×5½. Pp. x+268. 22 illustrations. 8 maps. London : Adam and Charles Black Ltd. Second edition, 1947. 15*s*.

A second edition of this excellent account of modern polar exploration is welcome even if the exigencies of the day allowed only modest additions and a few further illustrations. The book is well balanced, authoritative and accurate, and well provided with maps. The author has a facility for choosing the essential among the mass of material and for laying stress when it is merited. R. N. R. B.

The Ice-capped Island : Greenland. By KARE RODAHL. 8½×5½. Pp. 142. 78 photographs. Sketch map. End-paper maps. London and Glasgow : Blackie and Son Ltd., 1946. 12*s* 6*d*.

The theme of this book is a summer's stay at Clavering Island off Eirik Raudes Land. This is a region of East Greenland with much vegetation and therefore plenty of musk-oxen and foxes, and many wintering trappers. After a summer with Prof. H. Ahlmann measuring receding glaciers, the author wintered with two Norwegian trappers to study the vitamin content of arctic animals. He has written a bright and entertaining book with much about arctic animal life and nothing of the monotony so habitual to the pages of polar books. Incidentally it is of interest to note that he attributes the long known toxic effect of bear's liver to excessive content of vitamin A. Maps and illustrations are excellent. R. N. R. B.

Fangst og Forskning i Sydishavet. Vol. 3, ii. *Antarktikas Historie.* By BJARNE AAGAARD. 10×6½. Pp. xiii+563-1111. Illustrated. 49 maps. Kommandor Chr. Christensens Hvalfangstmuseum, Sandefjord, Publ. No. 11. Oslo : Gyldendal, 1944.

The first volume of this exhaustive history of Antarctic exploration and commercial ventures appeared in 1930, and now we have the second and final part of Volume 3, which is, in effect, a fourth volume in size and scope. The whole work, produced under the patronage of Lars Christensen, shows the amazing energy and enthusiasm of Mr. B. Aagaard in spite of all the difficulties he has had to face.

Stress is laid on Norwegian expeditions, Amundsen's journey to the Pole, and the discoveries of many Norwegian whalers, but nothing is left out and there are many maps, portraits, and pictures of well and little known ships. Finally there are a very full index and an antarctic bibliography additional to the one given in the second volume of the work.

But again one must regret that so valuable and important a work is not written in a language of wider use and common knowledge, especially when we know that Mr. B. Aagaard is entirely at home in English. In these days of austerity it is pleasant to handle the fine paper and excellent binding of this volume. R. N. R. B.

[Cf. AAGAARD, B. " Antarctic Whaling and Exploration." *S.G.M.*, 1929, 45 (*1*):23-34 ; (*2*) 65-81.—ED.]

Oppdagelser i Sydishavet fra Middelalderen til Sydpolens Erobring. By BJARNE AAGAARD. 9⅛×6½. Pp. 117. 29 illustrations. 8 sketch maps. Norges Svalbard- og Ishavs-Undersøkelser, Meddelelser No. 62. Oslo : Jacob Dybwad, 1946. *Kr.* 5.00.

The Norwegian historian of the Antarctic has compiled a summary of Antarctic discovery until the journeys to the Pole of Amundsen and Scott. Mr. Aagaard's work is always accurate and impartial : this sketch is no exception. There are many sketch maps and pictures of various ships. Most suitably three portraits are shown : of the two men whose effort to revive Antarctic exploration in the late nineteenth century were tireless, Georg von Neumayer and Sir John Murray, and of the discoverer of the Pole, Roald Amundsen. R. N. R. B.

CARTOGRAPHY

Die Schweiz auf alten Karten. By Professor Dr. LEO WEISZ. Introduction and appendix by Professor E. Imhof. 12×8½. Pp. 231. 244 map excerpts and other illustrations. Zurich : Verlag der Neuen Zürcher Zeitung, 1945.

No country is more noted for the excellence characteristic of its maps than Switzerland. This is a detailed panorama of the history and progress of the ancient maps of that country, beautifully produced and amply illustrated with facsimile examples.

The book does not attempt to treat the development of the modern map. It commences with the simple but practical route maps of the fifteenth century, copied on rolls twenty-one feet long and one foot wide, from a Roman map of the third century. There is a reproduction of a magnificent pictorial map of the Lake of Constance area, made in Cologne in 1499. At this time the renaissance of maps took place, when the symbols used began to take the more conventional forms of to-day, though the mountains continue to figure

prominently in picture form. Johan Stumpf was famous for making an atlas of the cantons in the sixteenth century. There are also interesting contemporary drawings showing the early methods of triangulation at the start of the seventeenth century, followed by the first examples, by Konrad Gyger, of hill shading, which in modern Swiss maps is now unsurpassed. Engraving came at the beginning, and hachuring at the end, of the eighteenth century, when the maps became comparable with those published in recent years. J. C. B.

EDUCATIONAL

World Geography. By JOHN HODGDON BRADLEY. 10×7½. Pp. vii+487. 443 illustrations (maps, diagrams, photographs). Boston, Mass., and London : Ginn and Co. Ltd., 1945. 14*s*.

Though this volume, on account of its size and price, may be unsuitable as a text book in secondary schools, it ought to find a place in the library of geography books for reference. As a world study it is a good corrective to a too close study of minor regions.

The inter-relationships between man and his environment, and the interdependence of all parts of the world, are clearly demonstrated with many specific examples. The dynamic and realistic character of the studies teach the student to think geographically. Many world problems of to-day and of times past are shown to have a basis in geography. On the other hand, the author shows how factors not geographical in themselves may have great geographical significance, for instance, in the localisation of many industries.

The book is divided into six units or sections : Geography in the Modern World ; Man and Climate ; Man and the Surface of the Lands ; Man and the Natural Resources ; Life Processes of Civilisation ; The Geography of Nations. This last unit is divided into chapters on the nature of nations, the British Empire, nations of the European peninsula, the Soviet Union, nations of the Far East, the South American republics, and the United States and its neighbours.

There is a wealth of photographic illustrations, all very clear and of geographical value. The coloured maps are beautiful, and the inset shows the spatial relationship between the continent or region and the rest of the world. At the end of each unit there are Questions for Discussion, Things to Do, and Books to Read. J. Y. E.

About this Earth : An Introduction to the Science of Geography. By F. KINGDON WARD, B.A., F.L.S., F.R.G.S., V.M.H. 8×5½. Pp. 168. London : Jonathan Cape Ltd., 1946. 7*s* 6*d*.

The purpose of this book is " to make intelligent people who are not primarily geographers realise how interesting the study of the earth can be." This work leads from a study of the earth's structure, of the distribution of mankind, and of climate, to that of environment. Jungle, alpine regions, desert, river, plain, mountain, lake, and island are all discussed. The last chapter is devoted to atomic energy influencing neither the features of the earth nor climate, except purely locally.

The general reader will find the book most informative and thought provoking. For the geographer there is much of fresh interest. M. G. L.

Fundamentals of Economic Geography. By NELS A. BENGTSON and WILLEM VAN ROYEN. 9×6. Pp. xxvii+802. 299 maps and illustrations. London : Constable and Co. Ltd. Revised edition, 1947. 32*s* 6*d*.

The sixteenth printing of this useful work was reviewed on p. 93 of the current volume of the *S.G.M.* Two further printings were published in the U.S.A. in 1946. The publication in London of the nineteenth printing will make the *Fundamentals of Economic Geography* more readily available to British students, and is very welcome. J. H. K.

Introduction to Plant Ecology : A Guide for Beginners in the Study of Plant Communities. By A. G. TANSLEY, M.A., F.R.S. 7¾×5¼. Pp. 260. 15 figs. London : George Allen and Unwin Ltd. Second edition, 1946. 8*s* 6*d*.

This excellent work replaced the author's *Practical Plant Ecology* (1923), and contains new chapters, others—on soil analysis—being omitted. The five parts cover : (1) The Introduction, (2) Structure, Distribution and Development of Vegetation, (3) Methods, (4) Habitat, and (5) Work in Schools. Welcoming the book, a geographer will find much that is of direct, as well as indirect, value to his broader, less intensive, view. At the same time, he may regret the absence of a closer link with geographical progress ; for instance, mention of the study of slope in relation to drainage (not merely to the angle of illumination, p. 168), and in relation to topography, particularly to its finer modulations essential to plant life, such as those due to glaciation. Again, one would welcome a hint on the importance of relating " natural and semi-natural vegetation " to deliberately induced vegetation —in other words, to agriculture and afforestation—surely essential to " practical " ecology. Without this, ecology might be in danger of becoming a study of waste and weeds, and would fall short of its more fundamental sense—that which is conveyed in the etymology of the name. A. G.

The Land of Britain and how it is used. By L. Dudley Stamp. 8×5½. Pp. ix+80. 16 plates. 20 maps and plans. Specimen land utilisation map. London : The British Council ; Longmans, Green and Co. Ltd., 1946. *2s 6d.*

As a background to the Land Utilisation Survey, the land use maps are linked with history, economics, geology, and climatology, and in the fifth chapter this booklet brings pre-war map sheets up to date. As a useful study for senior Secondary pupils, it gives a good, reasoned outlook on land utilisation such as cannot be gained except by extensive study of many of the Land Utilisation Survey Reports. As an essay on a wide field it loses the pith required by the advanced student. It will serve best as an introduction to land use and as a lead for more detailed study. J. R. M.

GENERAL

The Next Development in Man. By Lancelot Law Whyte. 8½×5½. Pp. 275. London : The Cresset Press Ltd., 1944. *15s.*

This little book is a big one ; it may prove to be a great one, though this the reviewer lacks knowledge to affirm. To geographers this book will prove profoundly suggestive. Geography seeks to recognise the " togetherness " of things in being and becoming, the interplay of " facts "—and things done—as *factors*, as inter-related forces, making and shaping. It recognises land forms as stages in the *process* of sculpture (by erosion) upon rock structures. Mapping geographic " distributions " within the limits and the unity of the globe, and within the seasonal rhythm of the year, geography is imbued with the concept of cumulative and enduring change ; it observes processes in the physical environment, the relationships of plants, animals and mankind, their evolution and development. Perforce, geographers must examine the objects of their study bit by bit, seeking concreteness and precision, and spurning facile generalisations of metaphysical unification. Yet many geographers are keenly aware of the lack of a unifying concept, the absence of which hampers and limits vision and thought.

For what it may be worth, the reviewer ventures his opinion that L. L. Whyte will deeply influence the formative philosophy within geography by this book upon man's next development and the integration of thought and action, of intellect, feeling and imaginative powers. This book will help to show how the " dualism of European man " may be fused into what Whyte calls " unitary " view, and the unitary way, of life. A. G.

Racial Pride and Prejudice. By Eric John Dingwall. 8×5¼. Pp. x+246. London : C. A. Watts and Co. Ltd., 1946. *8s 6d.*

The colour bar is familiar to all who study world problems, and is probably associated in our minds chiefly with the U.S.A. and South Africa. It functions, however, in a much wider field than this and is practised wherever there is colour prejudice. The impact of Nazism on world affairs has focussed attention on the wider problem—of which colour prejudice is a part—of the growth of prejudice in a community against all outside, or distinguishable from, the community ; for example, the Jews, peoples of different cultures, colonial peoples. The colour bar is usually supported by rationalisations at the economic level, but its real cause lies much deeper than in economics. Racial prejudice has many roots, in tradition, in the inheritance of slavery, in fear, in psychological irrationalities.

Dr. Dingwall gives a broad survey, in non-technical language, but comprehensive in extent, of the diverse manifestations of racial prejudice throughout the world, not only in the U.S.A. and South Africa, but in Great Britain, in the Dominions, in the French and British Empires, and in India and the Far East. It is a pity that in avoiding technical terms Dr. Dingwall allows himself to use such expressions as " people of white blood " and " people of coloured blood," which are scientifically meaningless as he himself shows. But apart from such minor flaws the book is a most valuable digest of the " racial " problem.
S. C. F.

The Illusion of National Character. By Hamilton Fyfe. 6½×4. Pp. vii+157. The Thinker's Library, No. 116. London : C. A. Watts and Co. Ltd., 1946. *2s 6d.*

This book, first published in 1940, is deservedly recommended by Shaw, Wells, Joad, and other eminent men. The thesis is that, at any moment, the behaviour of a people is determined by its material situation, by its environment, by its education through school, press, and leadership ; that there is no such reality as national character ; that the insistence upon national superiority and the rash ill-founded generalisations current about foreign affairs are the chief obstacles to the realisation of our common international interest and to the avoidance of war. There is great wealth of illustration drawn from the story of many nations, and the case is argued with clarity and competence. The author does not deal with the problem presented by a people disposed to admit the wisdom of his views and to act upon them, but threatened by attack from a quarter where these views have not found acceptance. R. T. C.

Land Classification for Land-use Planning. By G. V. Jacks. 9½×7½. Pp. 90. 3 figs. Bibliography. Technical Communication No. 43. Harpenden : Imperial Bureau of Soil Science, 1946. 4*s*.

This technical communication is obviously intended for professional planners, agriculturists, geographers, etc. and not for popular consumption. In it the problem of devising a satisfactory basis of land classification is discussed, and many examples of schemes used in different countries, or proposed by individual scientific workers, are described, some in great detail.

Dr. Jacks points out that land-use planning is essentially an exercise in human geography. Although in its performance many non-geographical sciences have much to contribute, the approach must be geographical. Four phases in land-use planning have been recognised : survey and classification, appraisal, design, and effectuation. This treatise is concerned chiefly with the first of these, though some of the schemes described include appraisal and, in a general way, suggest design. The discussion is limited to land classification in relation to the grouping of lands according to their suitability for producing plants of economic importance. Even with this slightly limited objective, there are great difficulties inherent in devising satisfactory schemes of classification, owing to the great diversity of factors involved, both of a physical and a social and economic character.

This communication provides the planner and others interested in problems of land-use with both food for serious thought and a valuable reference book, the latter function being enhanced by the extensive bibliography. C. P. S.

Danmarks gamle Tropekolonier. By Sophie Petersen. 10×6½. Pp. 435. 206 illustrations. Map of Danish West Indies, 1:120,000. Det Kongelige Danske Geografiske Selskabs Kulturgeografiske Skrifter, Bd. 4. Copenhagen : H. Hagerup, 1946.

The Royal Danish Geographical Society have issued this richly illustrated publication to the subscribers to their journal. Writing in Danish, the author gives in great detail a complete description, geographical, historical and cultural, of the old Danish Colonies in the tropics. It was only natural that an old seafaring nation like the Danish should wish to partake in that race for colonies, which took place in the seventeenth century, and Denmark succeeded in coming to an agreement with the natives and their chiefs in India, Africa, and the West Indies. The first colony was founded at Tranquebar in 1620 and many settlements were established in Bengal, Serampore, Pipley and Patna, and, in the following century, the Nicobar Islands were occupied. Denmark sent the first Lutheran missionaries to India in 1706 and founded the University at Serampore in 1827. Denmark was the first nation to stop the custom of the burning of widows, which was prohibited from 1829. The Danish possessions in India were transferred in 1845 to the British India Company, and Denmark gave up the sovereignty over the Nicobar Islands in 1868 over which the Union Jack was hoisted the following year.

In Africa, Denmark founded a colony on the Gold Coast in 1658, and in 1784 Danes were the first Europeans to assist the natives in battles against attacks by other Africans. In 1792 Denmark was the first country to introduce a law prohibiting the transport of slaves. The author describes how the Danes in 1826 helped the British in the war against the Ashantis. The Danes rescued the head, sewn in a leopard skin, of Sir Charles MacCarthy who two years earlier had been slain by the Ashantis in a desperate and disastrous fight. The Danish possessions were ceded to Great Britain in 1850.

The Virgin Isles were under Danish rule from 1666 until they were sold to the United States of America in 1917. When a census was taken in 1688 there were 148 white planters from twelve different nations and amongst them was one solitary Scot. By 1917 the total population was 26,000. E. S.

When Men and Mountains Meet. By H. W. Tilman, D.S.O., M.C. 8½×5½. Pp. x+232. 54 photographs. 6 sketch maps. Cambridge : University Press, 1946. 15*s*.

As H. W. Tilman judged mountains in order to get the best of human reactions out of them, so he judged men ; for his service with them both was of the distinguished order. He considers that " inaction in the face of fleeting opportunity is a crime, whereas climbing alone rather than not climbing at all is but a venial impropriety," and says, " however true it may be that a looker-on sees most of the game, I have not yet outgrown the preference for being in the thick of it rather than being relegated to a seat in the grand-stand." This is his driving force in the Himalaya in peace time, and in time of war, in Persia and North Africa. He gives a list of memorable bathes in the Congo, Kashmir, the Dauphiné, and " the cold blue pool of Tak I Bostan." He comes most fully into his own through the third medium, when parachuted into Albania in liaison to the Resistance ; for meeting men in the mountains was his delight. His account of those meetings, and the interesting photographs which support it, will appeal to readers, mountaineers, and geographers alike.

R. E. C.

CHAIR OF GEOGRAPHY, UNIVERSITY OF GLASGOW

Readers will learn with great satisfaction that a Chair of Geography has now been established at the University of Glasgow, and that the Head of the Department of Geography, Mr. Alexander Stevens, M.A., has been appointed the first Professor. The Chair of Geography in Edinburgh was established in 1931, and all interested in geography in Scotland will hope that ere long the Universities of St. Andrews and Aberdeen will take similar action, especially as in England and Wales nearly all Universities and University Colleges now have Professorships in the subject.

THE PHENOLOGICAL SURVEY

Observations of the date of occurrence of the flowering of plants, migration of birds, insects, etc., and of seasonal and local variations of these and similar events, provide not only an index of climatic vicissitudes but information of considerable value to agriculturists and foresters, to biologists, geographers, and other scientists—indeed to all who are interested in natural phenomena.

Systematic phenological records are available for various parts of eastern England since 1736, and can be linked with the data collected and compiled by the Royal Meteorological Society with the voluntary co-operation of numerous observers scattered throughout the British Isles. A scheme of observations was initiated in 1874 and has been extended from time to time. The Phenological Director since 1937, Major H. C. Gunton, M.B.E., has been producing the annual Phenological Report which presents the results in condensed and effective form for investigators.

As it is felt that a body of meteorologists is not wholly competent to maintain such work without the assistance of scientists working in other fields, the Council of the Royal Meteorological Society has recently constituted a committee, under the Chairmanship of Mr. Gordon Manley, to consider a number of problems arising with regard to this branch of the Society's activities. The general value of a Phenological Survey is evident, and the Survey should be maintained. Its Director and Officers act in an honorary capacity, but contributions towards the costs of producing the Phenological Report, and also opinions on any possible developments, of the scale and character of enquiry, would be welcome.

Members of the Royal Scottish Geographical Society interested in phenology, therefore, may care to communicate with Mr. Gordon Manley, Royal Meteorological Society, 49 Cromwell Road, London, S.W.7.

SIXTEENTH INTERNATIONAL CONGRESS OF GEOGRAPHY

In compliance with the decision of the International Geographical Union, and the Portuguese National Committee having been assured of Government approval and support, the International Congress of Geography will be held at Lisbon during the second fortnight in September 1948.

Committees nominated by the International Geographical Union will report on studies dealing with population, with Pliocene and Pleistocene terraces, and with climatic variations ; on publication and reproduction of old maps, on aerial photography, on cartography of Tertiary erosion surfaces, and on agrarian geography.

Papers to be read at the Congress will be grouped in seven sections : Cartography, Physical Geography, Biogeography, Human and Economic Geography, Colonial Geography, Historical Geography, History of Geography, Methodology and Teaching.

During the Congress there will be two one-day excursions, one to Estoril and the Serra de Sintra, and the other to the Serra d'Arrábida, in addition to a geographical ramble in the city of Lisbon and its immediate environs. There will be a choice of five simultaneous excursions to different parts of Portugal after conclusion of the meetings, and booklets giving full particulars will be issued several months prior to the opening of the Congress. These excursions will provide facilities for amplifying the study of special aspects discussed at the meetings. A ten-days' cruise to Madeira, immediately after the excursions, has also been planned.

Further information will be provided by the Secretariat, Centro de Estudos Geográficos, Praça do Rio de Janeiro 14, Lisboa, Portugal. Members of the Royal Scottish Geographical Society intending to attend the Congress are requested to inform the Secretary, R.S.G.S., Synod Hall, Edinburgh 1.

THE GEOGRAPHICAL ASSOCIATION

The Herbertson Memorial Lecture, on "Scotland, and Some Trends in Geography," will be given by Professor R. N. Rudmose Brown, D.Sc., in the Lothian Road Church Hall, on Friday, March 5th, 1948, at 7.30 P.M.

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

ORDINARY REVENUE AND EXPENDITURE ACCOUNT

For Year to 30th June 1947

SUBSCRIPTIONS—		
Ordinary	£2141 8 9	
Schools Corporate	97 10 0	
		£2238 18 9
LIFE MEMBERSHIP, DIPLOMA, AND ENTRANCE FEES—		
Portion applicable to Revenue		79 14 0
GOVERNMENT GRANT		200 0 0
GENERAL DONATIONS		342 12 2
DIVIDENDS AND INTERESTS		183 9 9
		£3044 14 8

MAGAZINE—Expenses of Publications :—			
Printing			£447 1 10
Editor			75 0 0
Illustrations			205 4 7
Maps			4 11 11
Wrappers, Index, and Miscellaneous			25 15 8
Postages			46 11 8
			£804 5 8
Less—Magazines sold	£213 7 9		
Advertisements	37 19 0		
			251 6 9
			£552 18 11
ROOMS—Upkeep of :—			
Rent, Rates, and Insurance	£221 5 0		
Cleaning and Repairs	76 10 11		
Heating and Lighting	34 14 11		
	£332 10 10		
Less—Donations	80 4 0		
			252 6 10
LECTURES	£638 13 6		
Less—Received for Tickets sold	220 5 9		
			418 7 9
SALARIES			836 4 11
AUDITOR'S FEE			10 10 0
SUPERANNUATION CONTRIBUTIONS			117 14 8
LIBRARY—Books, Maps, and Furnishings			102 13 9
PROVISION FOR CURRENT AND DEFERRED EXPENDITURE			250 0 0
GENERAL PRINTING			114 10 10
STATIONERY			34 18 6
TELEPHONE AND TELEGRAPHIC ADDRESS			35 13 11
ADDRESSOGRAPH			34 9 4
MEDALS			24 4 4
POSTAGES			96 0 1
DONATIONS			8 7 0
MISCELLANEOUS (including Fee to Lyon Court re alteration Society's Armorial Design)			86 4 8
			£2975 5 6
Surplus for year			69 9 2
			£3044 14 8

ASSETS

1. INVESTMENTS HELD BY THE SOCIETY AT COST—

A. LIFE MEMBERSHIP, GENERAL FUND, AND RESERVES—

£2118, 8s. 3d. 2½% Consolidated Loan		£1303 3 4	
£2025, 4s. 8d. Guaranteed 2¾% Stock		1438 6 5	
£250 2½% Defence Bonds		250 0 0	
			£2991 9 9

B. BEQUESTS AND DONATIONS—

(1) DR. J. G. BARTHOLOMEW MEMORIAL FUNDS—

£890 Guaranteed 2¾% Land Stock £500 3½% Conversion Stock		£1000 13 6	

(2) J. E. TOUCHE BEQUEST—

£560, 16s. 9d. Guaranteed 2¾% Stock	£420 13 6		
Cash in Hand	79 6 6		
		500 0 0	

(3) T. F. THOMPSON, DR. J. CURRIE, J. D. MUNRO, J. BENTLEY PHILIP, A. GEDDES SCOTT, MISS MORRISON, AND R. T. SKINNER—

£100 2½% Defence Bonds	£100 0 0		
£400 3% Defence Bonds	400 0 0		
		500 0 0	
			2000 13 6

II. SUNDRY DEBTORS		1 5 0
III. CASH IN BANK AND ON HAND		419 9 3
		£5412 17 6

LIABILITIES

I. ACCOUNTS OUTSTANDING			£80 1 4
II. PREPAID SUBSCRIPTIONS			11 2 0
III. GLASGOW EQUIPMENT FUND—			
Balance at 30th June 1946			80 4 0
IV. RESERVE for Current and Deferred Expenditure for Books, Maps and Atlases, Binding, Equipment, Furnishings and Exhibitions			920 0 0
V. FUNDS OF THE SOCIETY—			
(a) LIFE MEMBERSHIP FUND—			
Balance at 30th June 1946		£1267 0 0	
Sums received during Year		328 4 0	
		£1595 4 0	
Less—5% whereof transferred to Revenue Account	£79 14 0		
Diploma and Entrance Fees transferred to General Funds	172 0 0		
		251 14 0	1343 10 0
(b) GENERAL FUNDS—Including Bequests per contra—			
Balance at 30th June 1946		£2736 11 0	
Transfer of Diploma and Entrance Fees		172 0 0	
		£2908 11 0	
Add—Surplus for Year		69 9 2	2978 0 2
			£5412 17 6

LIVINGSTONE MEDAL FUND

FUNDS AS AT 30TH JUNE 1946			£1536 5 10
INCOME RECEIVED—			
Interest on Stocks			63 18 2
			£1600 4 0

FUNDS AS AT 30TH JUNE 1947—		
£133, 15s. 6d. Guaranteed 2¾% Stock		£100 10 5
£1390, 0s. 0d. 3% Savings Bonds 1965/75		1390 0 0
Cash in Bank		109 13 7
		£1600 4 0

DR. M. I. NEWBIGIN MEMORIAL

UNDS AS AT 30TH JUNE 1946			£310 19 6
INCOME RECEIVED—			
Interest on Stocks			9 18 0
			£320 17 6

FUNDS AS AT 30TH JUNE 1947—		
£360 Guaranteed 2¾% Stock		£294 11 4
Cash in Bank		26 6 2
		£320 17 6

Edinburgh, 14th August 1947.—I have examined the Accounts of the Royal Scottish Geographical Society for the year to 30th June 1947, of which the above is an Abstract, and compared them with the Vouchers and Instructions thereof, and I find the whole to be correctly stated and sufficiently vouched and instructed.

J. A. ROBERTSON DURHAM, C.A., *Auditor.*

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

REPORT OF COUNCIL

Sixty-third Session, 1946-47

1st July 1946 to 30th June 1947

The Council have the honour to submit the following Report :—

Membership

The changes during the Session are as follows :—

On the Roll at 1st July 1946		1895
New Members		239
		2134
Deduct by Death	26	
,, Resignation	166	
		192
On the Roll at 30th June 1947		1942

The total Membership is analysed thus :—

Edinburgh Ordinary	939	Edinburgh Corporate (Schools)	13
Glasgow Ordinary	429	Glasgow Corporate (Schools)	28
Dundee Ordinary	57	Aberdeen Corporate (Schools)	1
Aberdeen Ordinary	80	Life Members	196
Honorary Members	5	Associates	54
Outside Area Members	139		

Medal Awards

The Scottish Universities Medal was awarded to :—

Kenneth Ward, for distinguished work in the Junior Honours Class 1946-47, Glasgow University; John Innes Clarke, First Place, Ordinary Class 1946-47, Aberdeen University; A. T. A. Learmonth, First in Geography First Course, 1946, and in Geography Second and Inter-Honours Courses, 1947, Edinburgh University.

Diploma of Fellowship and Honorary Life Membership

On the occasion of the Centenary of the Geographical Society of the U.S.S.R., the Diploma of Fellowship and Honorary Life Membership were conferred on Professor Leo S. Berg, President of that Society.

Sir D'Arcy W. Thompson was elected an Honorary Life Member of the Society.

Meetings of the Society

The Society held forty meetings during the session: In Edinburgh, six Evening Lectures in the Usher Hall, twelve Wednesday Afternoon Lectures in the Lothian Road Church Hall, three Special Lectures, two in the Society's Rooms and one in the Lothian Road Church Hall, and two Film Shows in the Synod Hall during the Christmas Holidays.

Six lectures were held in the Lyric Theatre, Glasgow, five in the Training College, Dundee, and six in the Y.M.C.A. Hall, Aberdeen. The lectures are listed in the *S.G.M.*, Vol. 62, page 96, and Vol. 63, page 48.

Library and Map Department

During the session 3886 books and 138 map sheets were issued to members.

The following additions were made :—275 books, 561 map and chart sheets, 21 reports and 24 pamphlets; 16 books were presented by members and 18 purchased.

In addition, 12,250 maps were received from the Directorate of Military Survey, War Office. They are stored, temporarily, at the Signet Library until accommodation is available in the Synod Hall.

Presentations.—The Council thank the Director-General of the Ordnance Survey, for a complete set of the One Inch Map of Scotland, mounted on linen and folded, the latest form of the Popular Editions, incorporating the National Grid; the Hydrographer, Admiralty, for a complete and up-to-date set of Sailing Directions, comprising 74 volumes; and for Charts; and Mrs. Mary E. Stevenson, Edinburgh, for a gift of forms for the bank notes intended for the use of the Darien Company, 1695, mounted and framed. Another valuable addition was an anonymous gift of binding of a complete set of the Ordnance Survey Map Sheets of Great Britain and Ireland, One Inch, Half Inch, and Quarter Inch. They also desire to record their thanks to :—the Director of the Geological Survey; the Director, Naval Intelligence Division; the Director, Land Utilisation Survey; and the Director, Department of Lands and Forests, British Columbia; also the following for books and maps : Mrs. Blackadder; James M. Wordie; Dr. Douglas Guthrie; P. Eriksson; Professor Leo S. Berg; C. F. Alan Evans.

The Scottish Geographical Magazine

Three numbers of *The Scottish Geographical Magazine*, illustrated with sketch maps, diagrams, and photographs, have been published during the year. Reviews of books, and references to British and foreign periodical literature, provided a conspectus of current geographical activities and trends.

The Council desire to convey their thanks to the contributors of articles, and to the following who have rendered valuable assistance to the Editors :—Lady Agnew, Miss B. D. Baker, Dr. J. H. Birrell, W. Brotherston, Professor R. N. Rudmose Brown, Captain A. Buchanan, Dr. W. Burns, Miss E. R. Christie, Dr. A. M. Cockburn, R. E. Cooper, Mrs. A. Cormack, Dr. R. M. Craig, R. T. Currall, Col. Dalyell of the Binns, J. Y. Erskine, S. G. Farrar, W. A. Fisher, G. F. Friend, Dr. A. Geddes, Commander C. R. V. Gibbs, A. T. Gibson, R. S. Goodwin, A. Harrison, J. Hossack, Dr. G. P. Insh, Dr. J. H. C. Lebon, W. C. Leitch, H. C. Maitland, Dr. R. Miller, R. E. Moira, J. Paton, Rev. J. Reid, Rev. A. E. Robertson, D. Ross, Dr. C. P. Snodgrass, Dr. A. C. Stephen, Miss M. Vaughan.

The Society's Badge

In order to register the badge as a heraldic design with the Court of the Lord Lyon, a slight alteration was made in the design of the Society's Badge, the expenses of which were generously defrayed by a donation of £50 from Miss Agnes B. Bruce.

Donations

The donations during the year to the General Fund of the Society amounted to £274, 12s. 2d. of which the following were made under covenant :—£90, 18s. 2d. anonymously, and £100 from the late Dr. James Watt's trustees. The late Mr. Robert T. Skinner bequeathed a legacy of £100 free of legacy duty.

Treasurer

During the session the following appointment was made :—

Mr. S. C. Clapperton was appointed Treasurer of the Society in place of Mr. Alexander Harrison, C.A., who resigned.

Life Subscription Rates

The following form of Life Membership Rates was adopted :—

With all privileges wherever resident, £24, or £18 if over 55 or a Member for 10 years, or £6 if over 65 or a Member for 30 years, and proportional amounts between these periods.

The Society's Representatives

The following Members were appointed to represent the Society :—

Association for the Preservation of Rural Scotland—Sir Hugh McPherson ; Lt.-Col. John Johnston.
Scottish Council for National Parks—Lt.-Col. Gordon Dalyell of the Binns.
Bruce Memorial Prize Committee—James M. Wordie ; Harold K. Salvesen.
Carnegie United Kingdom Trust—General Council, Central Library for Students—Robert R. Walls.
Joint Committee for Anthropological Research and Training—Robert Kerr.
National Committee for Geography—John Bartholomew.
National Trust for Scotland—Professor Alan G. Ogilvie.
Permanent Committee on Geographical Names—John Bartholomew.
Scottish National Memorial to David Livingstone—Lt.-Col. John Johnston.

Obituary

It is with deep regret the Council record the loss to the Society of 27 Members by death, among them Robert T. Skinner, M.A., F.R.S.E., a Vice-President ; Charles B. Boog Watson, F.R.S.E., a Vice-President ; Miss Maude Newbigin, M.A., a past Member of Council ; Alfred Ernest Maylard, M.A., B.S., F.R.S.E., a Vice-President and Chairman of the Glasgow Branch, 1920-1924 ; and Mrs. Ralph Richardson, an Honorary Member of the Society.

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

PROCEEDINGS

Meetings of Council were held on October 17th, November 18th, and December 16th, 1947.

ANNUAL GENERAL MEETING

The Annual General Meeting was held in the Society's Rooms in Edinburgh, October 8th, 1947, the President in the chair.

The Annual Report of the Council was submitted by Mr. Donald G. Moir, and, on the motion of Mr. Rendel Clarke, seconded by Dr. Norman Stewart, unanimously adopted.

The Financial Statement was submitted by Mr. D. Alan Stevenson, and its adoption was moved by Mrs. Katharine L. Addison-Smith and seconded by Mr. R. Rendel Clarke.

The following members of the Society were unanimously elected to fill the vacancies existing on the Council :—

J. C. Bartholomew, Capt., R.E. ; J. Allan Brown ; William S. Coutts, C.I.E. ; J. MacQueen Cowan, D.SC., F.R.S.E. ; T. H. Gillespie, F.R.S.E. ; Alexander Harrison, C.A. ; James Hossack, M.A., B.COM. ; Richard E. Moira, A.R.I.B.A. ; Colin MacDonald ; Erik Schacke ; Catherine P. Snodgrass, PH.D. ; George Waterston, M.B.O.U. ; Ernest E. Manchester, F.R.S.G.S., Glasgow ; John B. Tait, D.SC., F.R.S.E., Aberdeen.

The Chairmen of the Branches were re-elected :—*Glasgow :* Lt.-Col. John Johnston, O.B.E., T.D., M.A. ; *Dundee :* George A. Cumming, M.A., PH.D. William Clark Souter, M.B., was elected Chairman of the Aberdeen Branch.

The other Office-bearers were re-appointed.

The Chairman thanked the retiring Members of Council who had completed their term of office :—Robert Grant, F.R.S.E. ; Alexander M. Cockburn, D.SC., F.R.S.E. ; William G. Leiper, F.R.S.G.S. ; James C. Tod, B.SC., A.M.INST.C.E. ; W. Allan Fisher, A.M.I.M.E., A.R.T.C. ; John Boyd Jameson, M.D. ; Mrs. Katharine L. Addison-Smith ; Miss Agnes Bruce ; Robert Kerr, M.A. ; John D. Gardner, B.SC., F.R.S.E. ; Alexander T. Gibson, M.A. ; Andrew C. O'Dell, M.SC. ; Robert B. Oliphant ; Lt.-Col. G. Dalyell of the Binns, C.I.E.

Mr. Bartholomew read the suggested amendments to the Constitution and Laws of the Society as recommended by the Council at a meeting held on July 19th, 1947. These were approved by the requisite majority.

Mr. D. Alan Stevenson moved a vote of thanks to Mr. George Walker, Secretary of the Society, and to Dr. J. H. Kenneth, Editor of the Magazine.

The Chairman paid tribute to Mr. Robert Grant, the retiring Chairman of Council, for the valuable services rendered during the past three years.

The President added the following remarks :—

The Royal Scottish Geographical Society can look back over 62 years of useful service. It has accomplished much, but with greater support it could do much more for geography. Unfortunately, finances had been hampering activities for a number of years. Consequently

it is satisfactory that an important legacy has been announced recently, made by the late Ralph Richardson. While the amount is still unknown, we may hope that it will permit of some development. But in any case means must be found, among other objects, for proper storage of the very large accession of maps printed for war purposes.

The Royal Scottish Geographical Society as a large Society, a Royal Society, and one receiving a grant-in-aid from the State, obviously has responsibilities ; and it is well to recall from time to time that there are responsibilities to our members, to the public and to science. Those due to members are always in mind ; but we should note that we serve the public, both directly all the time by offering facilities for consulting our map collection, and exceptionally by holding special exhibitions.

As for responsibility, as the only official body in Scotland devoted to geography, we should realise what is expected of the Society. Outside Scotland we are known chiefly by our Magazine and we must spare no effort to keep the standard of our publications as high as possible. At home, we should, I think, maintain close relations with other societies and offices concerned with the field sciences in general. They should find common ground in geography for discussion of many problems with which they are all concerned. For example, I hope we may be able to extend the experiment made last session by holding discussions after a special paper when invited guests will take part, as was done by experts in forestry and agriculture after the paper on " Shelterbelts in Scotland " by Dr. MacLagan Gorrie. We must maintain the closest relations, too, with other geographical bodies in Great Britain.

We are represented on the National Committee for Geography, a standing committee appointed by the Royal Society (London) which arranges for the British share in international geographical congresses. The next one is to be held at Lisbon in 1948.

The Royal Geographical Society of London is our elder sister society whose activities are like our own but wider, since they are more liberally supported. I think there is room for closer touch and co-operation, and I know that they will be welcomed in London.

The Geographical Association, a great organisation devoted to geographical education, is affiliated with our Society by special arrangements, and I take this opportunity to urge teachers of geography in this district to make the most of this relationship by energetic action now that they are freed from the other impositions of war-time.

The British Association for the Advancement of Science recently resumed its annual meetings last month at Dundee when we offered our hospitality to the Geographical Section. This was much appreciated, and I would emphasise our sustained interest in these meetings.

The youngest British geographical organisation is the Institute of British Geographers. It is the most purely professional body ; it has its own valuable publications, but we should remember that its members are also the potential contributors to our Magazine, and I hope that our Society will encourage them to bring new contributions to geographical science as well as useful restatements of older matter for publication in Scotland.

LECTURE SESSION, 1947-1948

JANUARY–MARCH 1948

EDINBURGH, *Usher Hall*

EVENING MEETINGS, at 7.30 P.M.

January 15th. Captain EJNAR MIKKELSEN, on " The Eskimos of East Greenland." Illustrated.

President of the Greenland Society, Copenhagen, Captain Mikkelsen is the highest Danish Official for East Greenland, which he visits every year. He received the Society's Silver Medal in 1912 for his exploration in North-Eastern Greenland.

February 5th. N. E. ODELL, PH.D., A.R.S.M., F.R.S.E., on " The Search for Oil." Illustrated.

Mr. Odell was awarded the Society's Livingstone Medal in 1945 for exploration in Spitsbergen, Canada, Northern Labrador, Greenland, Nanda Devi and Mount Everest.

March 11th. Lieut.-Col. F. SPENCER CHAPMAN, D.S.O., on " Behind the Japanese Lines in Malaya." Illustrated.

Lieut.-Col. F. Spencer Chapman was a member of the British Arctic Air-Route and Pan-American Airways Expeditions, 1930-31 and 1932-33, and has travelled in Iceland, West Greenland and Lapland. He was a member of the 1936 Himalayan Expedition and in 1936-37 was Secretary to the British Diplomatic Mission in Lhasa. During 1941-45 he was in charge of British stay-behind parties in Malaya. He was awarded the Polar Medal in 1933, and the Gill Memorial Medal in 1941.

Lothian Road Church Hall

AFTERNOON MEETINGS.—Wednesdays, at 3 P.M.

January	7th.	Major C. SPENCER COOKE, on "Socotra." Illustrated.
January	21st.	JAMES F. ANTON, M.B.O.U., on "Bermuda: The World's Garden." Kodachrome Slides.
February	11th.	Professor C. M. YONGE, B.SC., PH.D., D.SC., F.R.S., on "Coral Reefs of Florida." Illustrated.
February	25th.	Mrs. FRASER DARLING, on "Highland Problems from a Woman's Point of View." Illustrated.
March	3rd.	Captain V. I. RUSSELL, R.E., on "Two Years on Graham Land, Antarctica." Film and Slides.

AFTERNOON MEETING.—Friday, at 3 P.M.

March	18th.	JOHN SMART, M.A., D.SC., on "British Guiana and the Kaieteur Falls." Illustrated.

GLASGOW, *Lyric Theatre*, at 7.30 P.M.

January	14th.	Captain EJNAR MIKKELSEN, on "The Eskimos of East Greenland." Illustrated.
February	6th.	N. E. ODELL, PH.D., A.R.S.M., F.R.S.E., on "The Search for Oil." Illustrated.
March	11th.	Lieut.-Col. F. SPENCER CHAPMAN, D.S.O., on "Behind the Japanese Lines in Malaya." Illustrated.

ABERDEEN, *Y.M.C.A. Hall*, at 7.45 P.M.

January	27th.	Captain V. I. RUSSELL, R.E., on "Two Years on Graham Land, Antarctica." Film and Slides. Captain Russell of the Falkland Islands Dependencies Survey was Leader of the Hope Bay Base during 1946. This base is one of several carrying on Antarctic exploration and other scientific work.
February	24th.	N. E. ODELL, PH.D., F.R.S.E., on "The Search for Oil." Illustrated.
March	16th.	JOHN SMART, M.A., D.SC., on "British Guiana and the Kaieteur Falls." Illustrated. Dr. John Smart is a lecturer in the Department of Zoology, in the University of Cambridge. Previously he was on the staff of the Department of Entomology, British Museum (Natural History), and it was then, in 1937, that he took part in the expedition to British Guiana that will be the subject of his lecture.

DUNDEE, *School of Economics Lecture Hall*, at 7.30 P.M.

January	28th.	Captain V. I. RUSSELL, R.E., on "Two Years on Graham Land, Antarctica." Illustrated.
February	25th.	N. E. ODELL, PH.D., F.R.S.E., on "The Search for Oil." Illustrated.
March	17th.	JOHN SMART, M.A., D.SC., on "British Guiana and the Kaieteur Falls." Illustrated.

NEWBIGIN PRIZE: 1948 AWARD

A Bronze Medal and Money Prize will be awarded for the best Essay, suitable for publication in *The Scottish Geographical Magazine* and not exceeding 7000 words in length, on any subject relating to the geography of Scotland.

Essays, in envelopes marked "Newbigin Prize," must be lodged with the Secretary, Royal Scottish Geographical Society, Synod Hall, Castle Terrace, Edinburgh 1, on or before October 31st, 1948.

SECRETARY

Applications are invited for the appointment of Secretary to the Royal Scottish Geographical Society. Administrative experience is essential. The salary will be £400 to £500 according to qualifications, less deduction for superannuation.

Applications, stating age, qualifications and administrative experience, should be sent to the Hon. Secretaries, Royal Scottish Geographical Society, Synod Hall, Edinburgh 1, before January 31st, 1948.